BayRS Version 14.00

Part No. 308963-14.00 Rev 00
September 1999

4401 Great America Parkway
Santa Clara, CA 95054

Configuring APPN Services

NORTEL NETWORKS™

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Preface

This guide describes Advanced Peer-to-Peer Networking (APPN) services and what you do to start and customize APPN services on a Nortel Networks™ router.

Before You Begin

Before using this guide, you must complete the following procedures. For a new router:

- Install the router (see the installation guide that came with your router).
- Connect the router to the network and create a pilot configuration file (see *Quick-Starting Routers*, *Configuring BayStack Remote Access*, or *Connecting ASN Routers to a Network)*.

Make sure that you are running the latest version of Nortel Networks BayRS™ and Site Manager software. For information about upgrading BayRS and Site Manager, see the upgrading guide for your version of BayRS.

Text Conventions

This guide uses the following text conventions:

angle brackets (< >)	Indicate that you choose the text to enter based on the description inside the brackets. Do not type the brackets when entering the command. Example: If the command syntax is: **ping** <*ip_address*>, you enter: **ping 192.32.10.12**
bold text	Indicates command names and options and text that you need to enter. Example: Enter **show ip** {**alerts** | **routes**}. Example: Use the **dinfo** command.
braces ({})	Indicate required elements in syntax descriptions where there is more than one option. You must choose only one of the options. Do not type the braces when entering the command. Example: If the command syntax is: **show ip** {**alerts** | **routes**}, you must enter either: **show ip alerts** or **show ip routes**, but not both.
brackets ([ ])	Indicate optional elements in syntax descriptions. Do not type the brackets when entering the command. Example: If the command syntax is: **show ip interfaces** [**-alerts**], you can enter either: **show ip interfaces** or **show ip interfaces -alerts**.
ellipsis points (. . .)	Indicate that you repeat the last element of the command as needed. Example: If the command syntax is: **ethernet/2/1** [<*parameter*> <*value*>] **. . .** , you enter **ethernet/2/1** and as many parameter-value pairs as needed.

italic text	Indicates file and directory names, new terms, book titles, and variables in command syntax descriptions. Where a variable is two or more words, the words are connected by an underscore. Example: If the command syntax is: **show at** <*valid_route*> *valid_route* is one variable and you substitute one value for it.
`screen text`	Indicates system output, for example, prompts and system messages. Example: `Set Trap Monitor Filters`
separator (>)	Shows menu paths. Example: Protocols > IP identifies the IP option on the Protocols menu.
vertical line (|)	Separates choices for command keywords and arguments. Enter only one of the choices. Do not type the vertical line when entering the command. Example: If the command syntax is: **show ip** {**alerts** | **routes**}, you enter either: **show ip alerts** or **show ip routes**, but not both.

Acronyms

This manual uses the following acronyms

ANR	Automatic Network Routing
APPN	Advanced Peer-to-Peer Networking
COS	class of service
CP	control point
DLC	data link control
DLCI	data link connection identifier
DLSw	data link switching
DLUR	dependent logical unit requester
DLUS	dependent logical unit server
DS	directory services
DSPU	down stream physical unit
EN	end node
EP	entry point
FDDI	Fiber Distributed Data Interface
FQPCID	fully qualified procedure correlation identifier
GDS	general data stream
HPR	High Performance Routing
IP	Internet Protocol
ISR	intermediate session routing
LAN	local area network
LEN	low-entry networking
LLC	logical link control
LU	logical unit
MAC	media access control
MDS	multiple domain support
MIB	Management Information Base

NCP	Network Control Program
NN	network node
NNS	network node server
PCID	procedure correlation identifier
PU	physical unit
RSCV	route selection control vector
RTP	Rapid Transport Protocol
SAP	service access point
SATF	shared access transport facility
SDLC	Synchronous Data Link Control
SNA	Systems Network Architecture
SNMP	Simple Network Management Protocol
SRB	source routing bridge
SSCP	system services control point
TG	transmission group
TPF	transmission priority field
VRN	virtual routing node
VTAM	Virtual Tecommunications Access Method
XID	exchange identification

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Tokyo, Japan	81-3-5402-7041

Chapter 1
Advanced Peer-to-Peer Networking Overview

IBM Advanced Peer-to-Peer Networking (APPN) architecture concepts include:

- APPN node types
- Control points and logical units
- Dependent logical unit requester and server
- APPN interfaces, ports, and link stations
- Connection networks
- Intermediate session routing
- High performance routing
- APPN services

Review these concepts if you are responsible for configuring APPN on Nortel Networks routers in your network. If you are already familiar with APPN concepts, go directly to Chapter 2 for information on starting APPN on a router.

APPN Networking Overview

APPN is an architectural extension of IBM Systems Network Architecture (SNA). As participants in an SNA network, APPN nodes use distributed network services for dynamic routing, connection, topology, and directory information, simplifying network definition and maintenance.

Nortel Networks routers participate as APPN network nodes in IBM SNA network environments (with or without the presence of an IBM mainframe computer) and communicate with adjacent network nodes, end nodes, and low-entry networking nodes. APPN runs on all Nortel Networks router platforms using local and wide area network facilities, as follows:

- LLC2 media, including Ethernet, token ring, and frame relay
- LLC2 using Source Routing Bridge (SRB) encapsulation formats over Ethernet, FDDI, SMDS, frame relay, and Point-to-Point (PPP) protocols
- SDLC links in point-to-point and multipoint configurations

The Nortel Networks APPN implementation complies with Version 2 of the IBM APPN Network Node specification, with advanced optional APPN function sets.

APPN Node Types

APPN supports the following node types:

- Network nodes
- End nodes
- Low-entry networking nodes

Network Nodes

Network nodes (NNs) provide routing and networking services to other network nodes and end nodes. These services include locating network resources, calculating routes, and routing sessions. NNs use configured or dynamic control-point-to-control-point (CP-CP) sessions with adjacent nodes to manage, communicate, and exchange network topology and resource information. Any adjacent node that does not support control point sessions (such as a low-entry networking node) cannot participate in this exchange and must rely on static definitions. An NN that provides control point services to end nodes is called a network node server (NNS).

End Nodes

End nodes (ENs) have control points that allow them to register and share network information (using CP-CP sessions) with the NNS. End nodes provide APPN services to local users and applications and can operate independently in simple network configurations. In most configurations, end nodes are application hosts and workstations that register their resources with their network node server.

Low-Entry Networking Nodes

Low-entry networking nodes (LENs) are the simplest type of node in an APPN network. LEN nodes communicate with each other as adjacent peers.

LENs do not use control point sessions and cannot exchange resource information with an NN. Therefore, the resource information for LENs is preconfigured and supported at the NN. LENs typically include personal computers and workstations.

Figure 1-1 illustrates a simple APPN network with the three APPN node types.

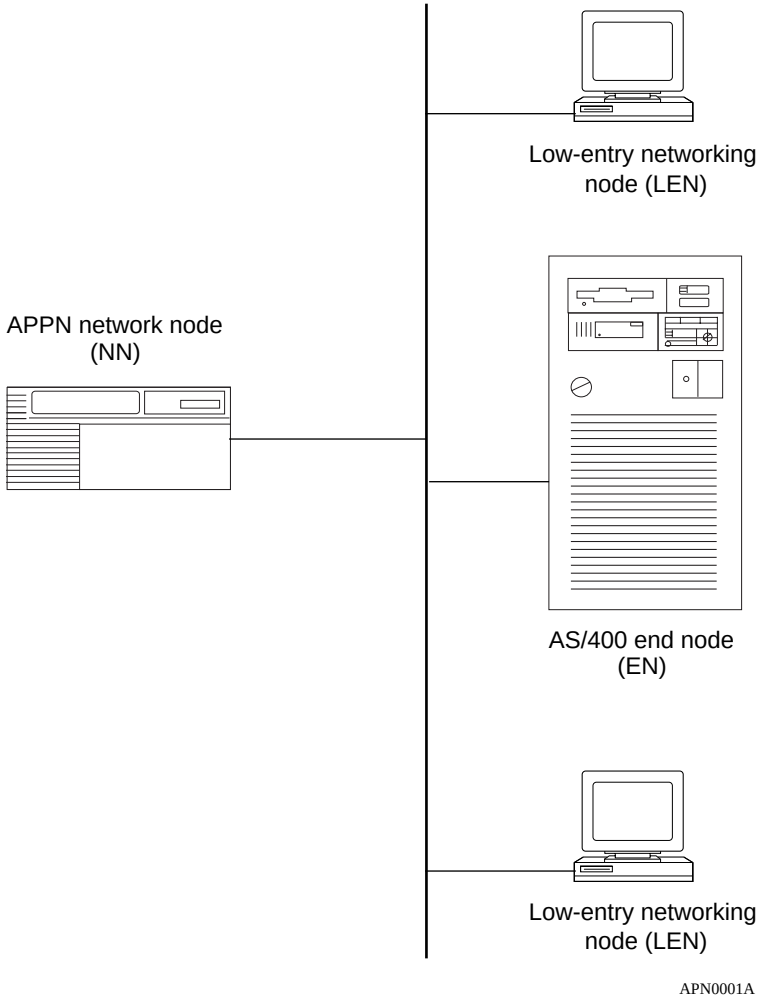

Figure 1-1. APPN Network with Different Node Types

Control Points and Logical Units

APPN uses control points (CPs) to manage nodes and network resources by establishing CP-CP sessions between nodes. All CP-CP sessions use logical unit (LU) 6.2 sessions.

During a CP-CP session (Figure 1-2), adjacent nodes exchange network information. Network nodes use CP-CP sessions to keep track of the network topology and directory information. Adjacent end nodes use CP-CP sessions to register resources and to request directory searches from the NNS.

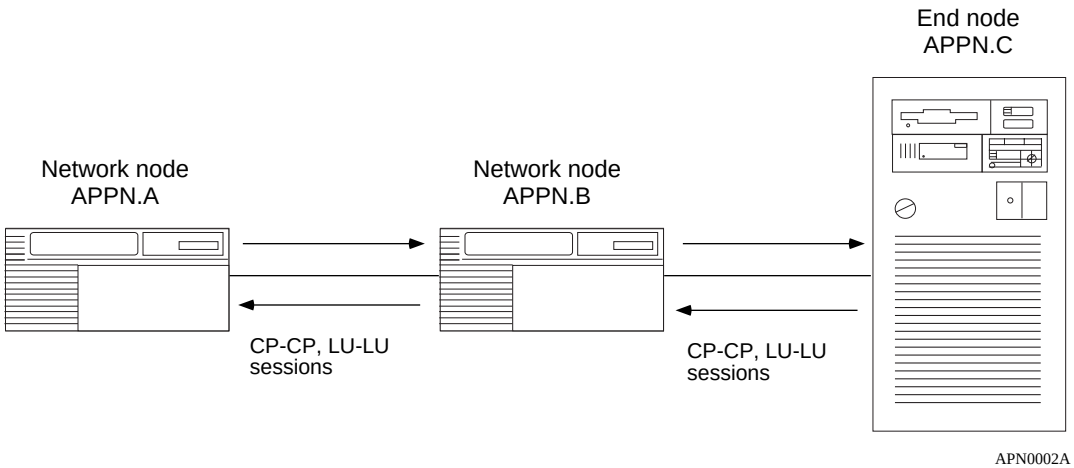

Figure 1-2. CP-CP and LU-LU Sessions

In Figure 1-2, APPN.C registers its local resources with APPN.B, and sends requests to APPN.B for information about the network and its resources. APPN.B functions as an NNS for APPN.C.

APPN.B has CP-CP sessions with both APPN.A and APPN.C. In this example, APPN.A and APPN.B exchange network topology and cooperate in directory searches.

Dependent Logical Unit Requester and Server

APPN's Dependent Logical Unit Requester (DLUR) supports LU type 0, 1, 2, 3 and LU6.2 dependent logical units within APPN. In contrast to the base APPN architecture, which uses independent LUs for LU-to-LU sessions, dependent LUs need a mainframe-based system services control point (SSCP) to establish and manage LU-to-LU sessions. DLUR allows these dependent LUs to use APPN networks by encapsulating the SSCP control flows within the APPN LU 6.2 sessions. The APPN network routes the dependent LU-LU data flows.

DLUR works with the dependent LU server (DLUS) component of the virtual telecommunications access method (VTAM) to provide a path for SSCP flows between VTAM and dependent LUs across an arbitrary APPN backbone network. The DLUR node serves as a point of connection for PU2.0 devices (such as 3270-type devices) to attach to an APPN backbone.

The DLUR and DLUS components in an APPN network allow the SSCP and the PU2.0 device to exchange control flows across the APPN backbone. DLUR and DLUS form a tunnel (called a CP-SVR pipe) that allows the SSCP at the DLUS side of the pipe to send SNA control flows to the PU2.0 device at the DLUR side of the pipe. The CP-SVR pipe is a pair of LU6.2 sessions that encapsulate the SSCP control flows.

Figure 1-3 illustrates the DLUR and DLUS components in APPN.

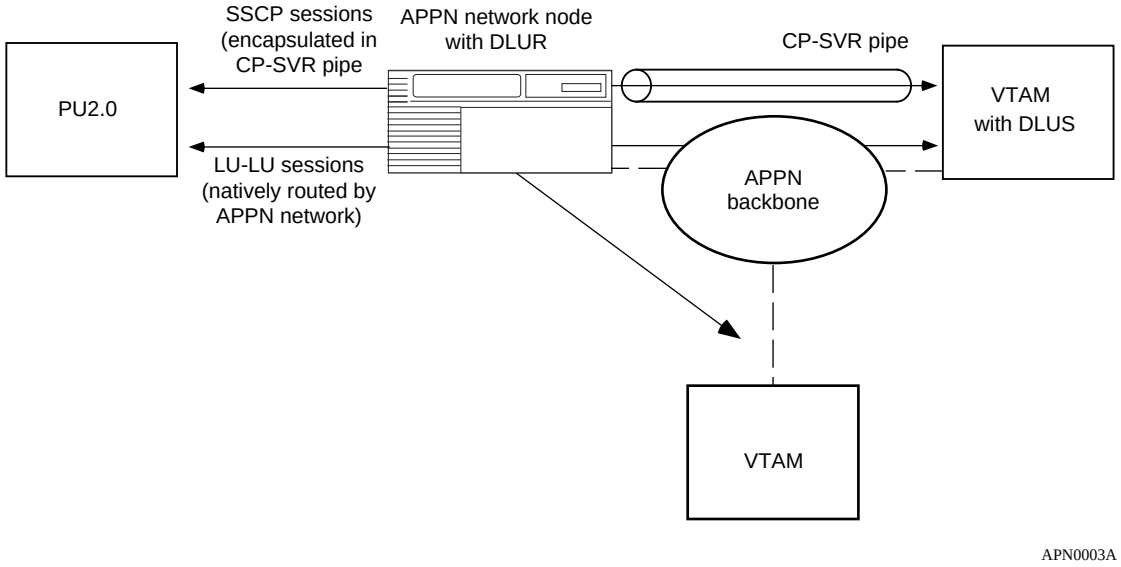

Figure 1-3. DLUR and DLUS in an APPN Network

Typically, in a large network, multiple DLUS nodes serve many DLUR nodes distributed across the APPN backbone. A DLUR node can establish pipes with several DLUS nodes, although a single PU2.0 device can receive traffic from only one of them, because the device is only controlled by a single SSCP.

When the SSCP and the PU2.0 device exchange control flows, BINDs establish the path that the LU-LU session traffic uses through the network. Since the BIND flows independently of the CP-SVR pipe, the LU-LU traffic can take a different path through the network (the DLUS calculates a route using the topology database and class of service [COS] definitions). Refer to the “APPN Services” section in this chapter for information on the topology database and COS definitions.

Interfaces, Ports, and Link Stations

APPN configurations comprise interfaces, ports, and link stations. Figure 1-4 shows how interfaces, ports, and link stations in a simple APPN network relate.

Note: In this guide, the term “interface” has the same meaning as data link control (DLC) in IBM publications.

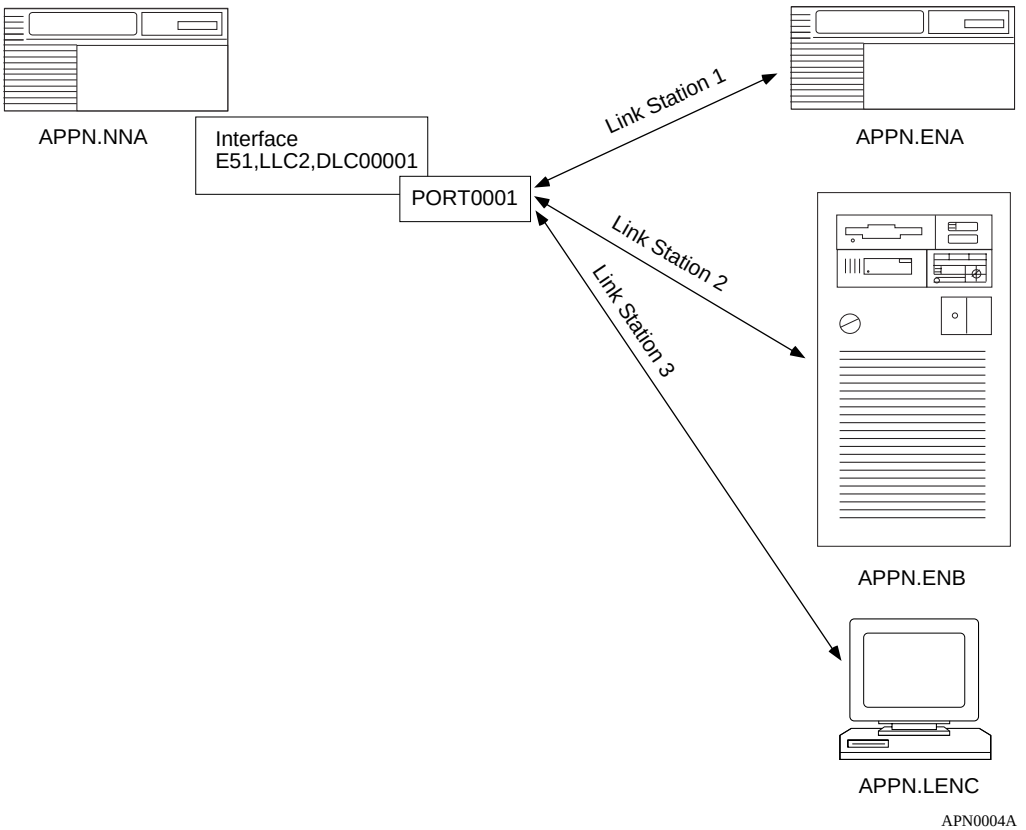

Figure 1-4. Interface, Port, and Link Station Relationship

Interfaces

Interfaces provide data link control (DLC) processes to ensure reliable delivery of information between adjacent stations using a specific data link protocol, such as LLC or SDLC.

Each APPN interface can support one or more ports.

A system-assigned DLC number (such as DLC00008) identifies APPN interfaces on Nortel Networks network nodes.

For information on adding and enabling APPN interfaces on Nortel Networks network nodes, refer to Chapter 2.

Ports

A port provides a unique access point (such as a MAC/SAP address pair) used by the local Nortel Networks network node. A port in an APPN network has a DLC process and a set of configurable parameters.

Link Stations

A link station is a logical connection between adjacent nodes. Link stations use ports to create this connection. Multiple link stations can exist on a single port, and multiple link stations can exist between the same two nodes. You can configure a link station entry, or APPN creates it dynamically when a remote node initiates a connection.

Note: The term link often refers to the physical components that enable two adjacent link stations to communicate. Within APPN, a link refers to a logical connection between two nodes. The term transmission group (TG) is also used throughout this manual and has the same meaning as link.

Link stations have a set of configurable parameters, such as:

- Link station name and the name of the adjacent node
- Adjacent link station role: primary, secondary, or negotiable
- Adjacent link station definitions, such as MAC and SAP addresses

Connection Networks

APPN end nodes on a shared access transport facility (SATF), such as a token ring network, are directly connected to each other; they can communicate with each other without having to route traffic through an intermediate network node. However, these end nodes still require definitions to other nodes and the nodes must be accessible over CP-CP sessions. A *connection network* (CN) simplifies APPN configurations by reducing the number of connections that you must configure between nodes on an SATF.

When two nodes on the same SATF exist on the same connection network, these nodes are unaware that they have a direct connection to each other; the NNS, acting as an APPN virtual routing node (VRN), calculates a route between the two end nodes so that they can communicate directly. For the end nodes to communicate with each other over a connection network, the end nodes require a connection to the VRN and a connection to the NNS.

Figure 1-5 illustrates a sample connection network. This connection network, such as that between EN2 and EN3, may use resources at the network node (NN1) to establish sessions with each other.

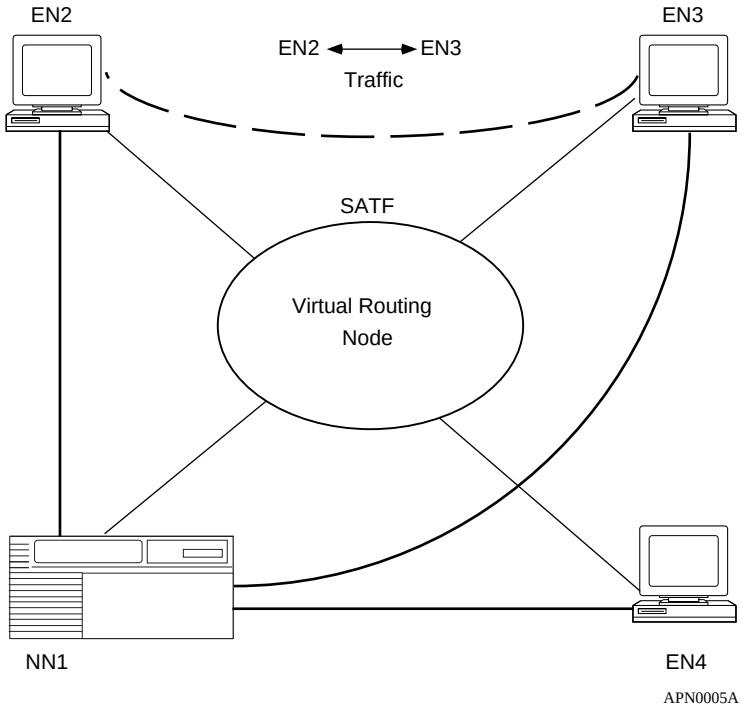

Figure 1-5. Sample APPN Connection Network

Intermediate Session Routing

Intermediate session routing (ISR) provides a reliable, connection-oriented, LU-LU session path between nonadjacent APPN nodes. ISR session connectors (SCs) and a session connection manager (SCM) forward sessions through the intermediate network node (Figure 1-6).

At session endpoints, the LU, with control point services, establishes a session with a session partner and routes session data back and forth with the partner LU. INTERMEDIATE network nodes do not control the LU endpoints, and LU services cannot be invoked on these nodes. ISR forwards session data to the next node along the session path.

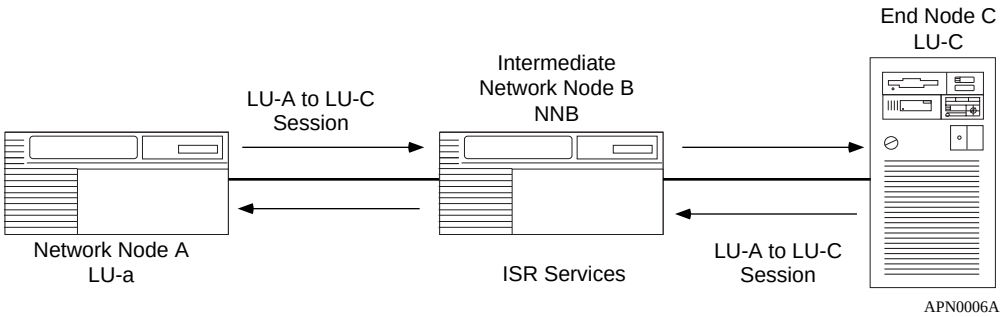

Figure 1-6. Nonadjacent LU-LU Session Through an Intermediate Node

In Figure 1-6, LU-A and LU-C are nonadjacent session partners. ISR at NNB forwards session data between the nonadjacent nodes, LU-A and LU-C. NNB creates a session connector (SC) for each session passing through it.

Figure 1-7 illustrates ISR function placement in the SNA layered architecture. Routing takes place at the SNA Layer 4, called the Transmission Control layer. Layer 4 performs flow control operations, specifically segmentation and reassembly, and pacing.

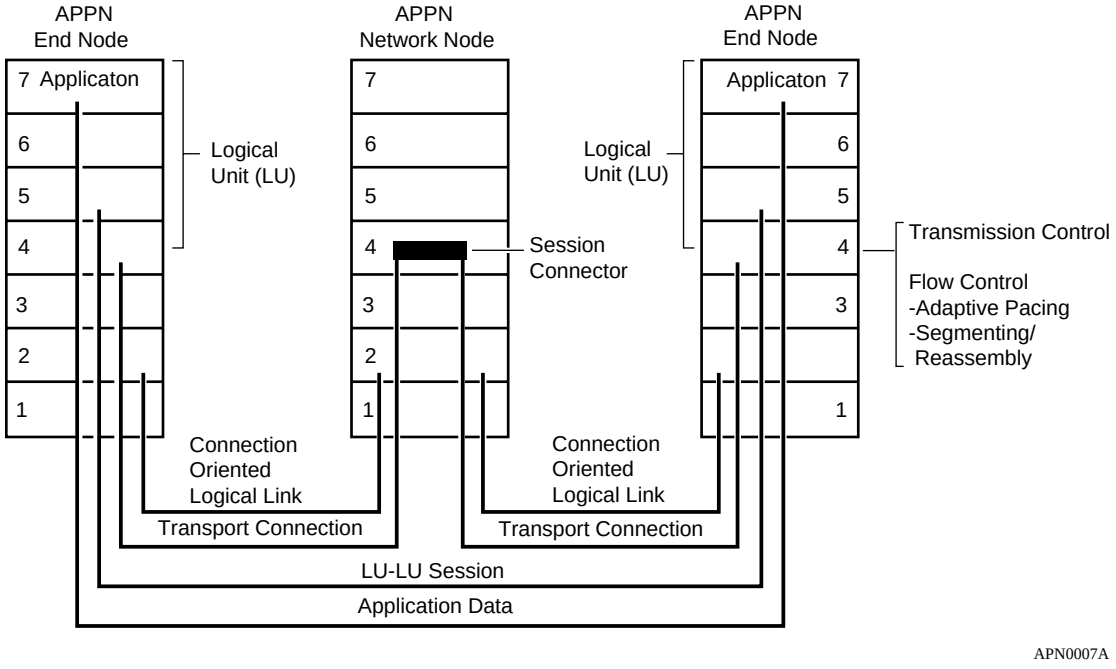

Figure 1-7. APPN ISR Routing Functions in SNA Architecture

Packet Segmentation and Reassembly

To maximize network performance, ISR sends the largest packet size allowable on each network interface that you configure for APPN. Intermediate nodes, when necessary, segment and reassemble packets of different packet sizes. The Max RU Size for ISR Sessions parameter sets the maximum packet size for your APPN configuration.

Adaptive Pacing

ISR's Adaptive Pacing controls data flow and congestion by managing the number of messages the network node receives during a session. To prevent memory consumption, APPN uses "pacing windows" to control the maximum number of incoming messages. During network activity, this pacing window changes dynamically, allowing the receiving node to adjust the rate at which data flows into its buffers.

To specify the maximum size of the adaptive pacing window, configure the ISR Receive Pacing Window parameter.

High Performance Routing

APPN's high performance routing (HPR) increases data routing performance and reliability. HPR allows high-speed forwarding in intermediate nodes at the Data Link Control layer (Layer 2) of SNA, operating much faster than the intermediate session routing (ISR) base component in APPN. HPR consumes fewer network resources (memory and control processor) by

- Minimizing storage and processing activities in intermediate nodes
- Reducing the amount of error recovery on individual lines
- Implementing nondisruptive path switching function that reroutes sessions around failed links or nodes

HPR uses the Rapid Transport Protocol (RTP) and Automatic Network Routing (ANR). RTP also supports adaptive rate based (ARB) congestion control.

Figure 1-8 illustrates HPR in the SNA layered architecture. Routing takes place at the SNA Data Link Control layer. Layer 2 performs reliable, sequential delivery, selective retransmission, and nondisruptive rerouting using RTP, as described in this section.

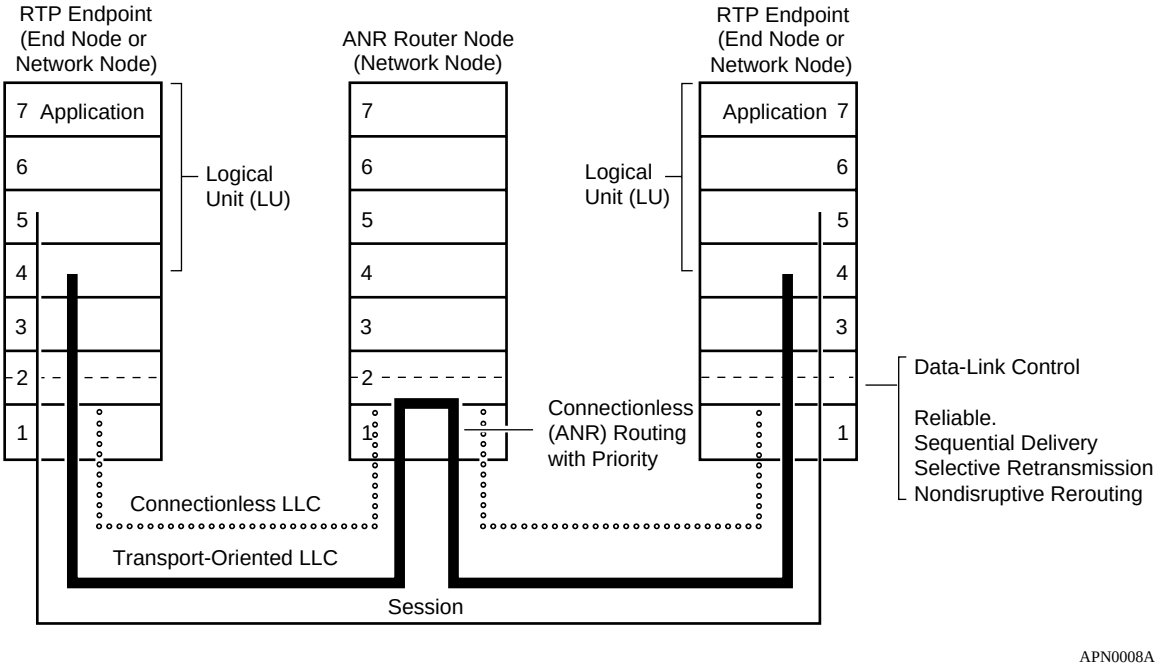

Figure 1-8. APPN HPR Routing Functions in SNA Architecture

Rapid Transport Protocol

RTP is a connection-oriented, full-duplex protocol that supports data in high-speed networks at APPN NN endpoints. HPR uses RTP connections to transport LU-LU and CP-CP traffic. A single RTP connection allows traffic from multiple APPN sessions (requesting the same class of service) to share the same logical "pipe." This conserves network resources by minimizing the role of intermediate NNs in the path, and by reducing error recovery and flow control operations. Figure 1-9 illustrates an RTP connection supporting multiple sessions between endpoint nodes over a logical pipe.

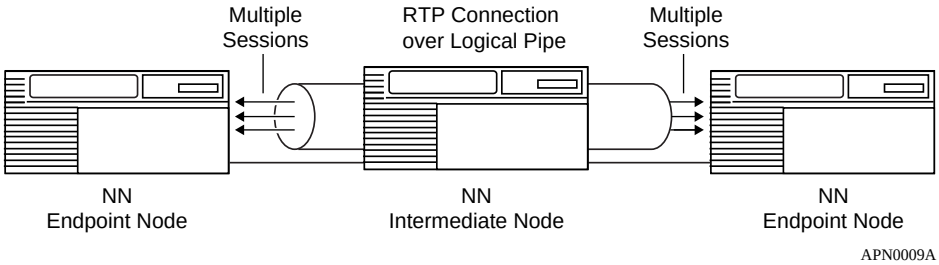

Figure 1-9. HPR RTP Connection Supporting APPN Sessions

RTP functions include:

- Non-disruptive path switching
- End-to-end error recovery
- End-to-end flow and congestion control

Non-Disruptive Path Switching

The HPR non-disruptive path switch dynamically reroutes RTP connections around failed links or nodes. If a path fails, the RTP component at the NN endpoint of the logical link calculates a new path based on the desired class of service and transmission priority (if it exists). RTP performs the switching transparently so that the session is unaware that rerouting is taking place. Non-disruptive path switching forwards and reverses traffic to follow different routes through the network, and also recovers traffic that was lost at the time of failure.

End-to-End Error Recovery

End-to-end error recovery enables APPN NN endpoints to recovery lost traffic. HPR endpoint NNs always perform end-to-end recovery. However, Site Manager allows you to specify base APPN link-level error recovery, where error recovery is done on every link, consuming more network resources.

Note: High-speed links generally have low error rates. Therefore, link-level recovery may not be necessary in the higher speed HPR configurations.

When link level recovery is turned off and an error is detected, the packet is discarded, resulting in a gap in the stream of bytes over the RTP connection. When the RTP connection endpoint NN detects the gap in the incoming byte stream, it informs the sender to begin retransmitting from the first byte after this point in the stream. RTP supports selective retransmission of parts of the byte stream, when the RTP endpoint requests a range of bytes for retransmission.

End-to-End Flow and Congestion Control

Operating at the NN sending and receiving endpoints of an RTP connection, HPR uses a preventative mechanism called adaptive rate-based (ARB) congestion control. ARB monitors, predicts, and regulates the flow of traffic into the network as conditions change. When the network approaches congestion (increased delay, decreased throughput), ARB reduces the input traffic rate so that a recipient endpoint NN can adequately handle the traffic.

With multiple RTP connections over a single link, the ARB function regulates the flow of traffic in all connections. This provides fairness to all connections.

With multiple SNA sessions over a single RTP connection, HPR’s adaptive session-level pacing maintains fairness among the sessions. This prevents one session from unfairly consuming network resources, compared to other sessions on the RTP connection.

Automatic Network Routing

Automatic network routing (ANR) minimizes storage and processing requirements for routing packets through intermediate nodes. ANR functions include:

- Fast packet switching
- Session transparency
- Source routing

Fast Packet Switching

ANR operates at the Data Link Control layer of the SNA architecture. Operating at a lower layer than APPN ISR improves packet switching performance in the intermediate nodes. Functions typically performed at the intermediate node, such as link-level recovery, segmentation, flow and congestion control, are performed at the RTP connection endpoints.

Session Transparency

Intermediate nodes are not aware of the SNA sessions or the RTP connections established across the nodes. This eliminates the need for storing routing tables and consuming resources (memory and buffers) at the intermediate nodes.

Source Routing

ANR uses a source routing algorithm. ANR carries the routing information in the network header of each packet. For each activated link, an ANR label is dynamically assigned to the packet. As a packet traverses the network, each node strips off the information it uses in the packet header before forwarding it, allowing the next node to easily find its routing information at a fixed place in the header. This allows faster switching through a node. Additionally, there is no ANR restriction on the number of hops in the network.

Figure 1-10 illustrates how ANR routes packets over an APPN HPR network. The intermediate network node strips the first routing label (A1) from the network header before forwarding the packet on the A1 link. C5 represents the endpoint in the last HPR node.

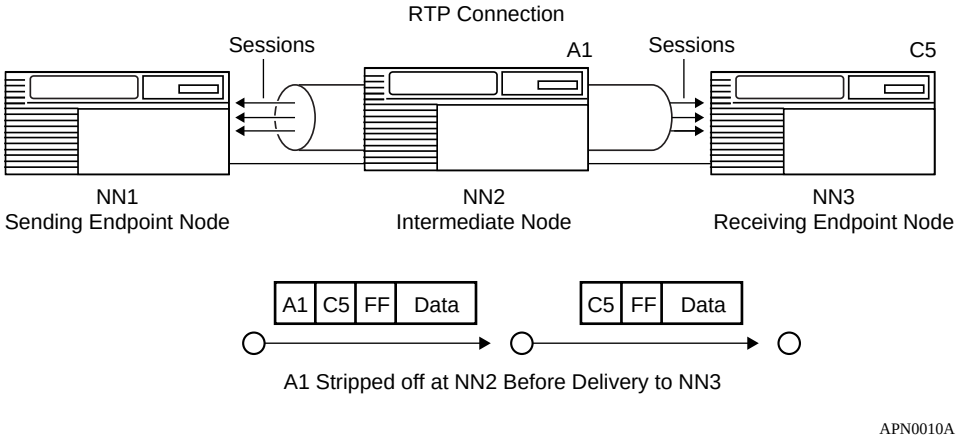

Figure 1-10. HPR ANR Routing and Packet Handling Operations

APPN Services

The APPN services on the NN include:

- Session services
- Directory services
- Topology and routing services
- Configuration services
- Management services

Session Services

Session services (SS) generates unique session identifiers, activates and deactivates CP-CP sessions to exchange network information, and assists LUs in initiating and activating LU-LU sessions. Session services:

- Invokes directory services to locate a partner LU
- Invokes topology and routing services (TRS) to calculate the optimal route between the origin and destination node
- Informs management services (MS) about newly activated or deactivated CP-CP sessions

Directory Services

Directory services (DS) manages the directory database and locates network resources throughout an APPN network. To locate network resources, directory services at each node collects resource information and maintains the information in a *local directory database*. Through a CP-CP session between an APPN network node and an adjacent APPN end node, the APPN network node registers (by end node request) the APPN end node's resources in its local directory database.

An APPN network node maintains database entries for

- Local resources (LUs and the CP)
- End node resources within the APPN network node's domain
- End node or network node resources outside the APPN network node's domain (called cross-domain resources)

An APPN end node or low-entry networking node maintains database entries for

- Local resources
- Local resources on adjacent nodes that have peer-to-peer communication sessions (without the presence of an APPN network node or control point, in the case of a peer-to-peer end node and low-entry networking node)

Topology and Routing Services

Topology and routing services (TRS) resides in every APPN network node and, in lesser form, in every APPN end node and low-entry networking node. In APPN network nodes, TRS collects and exchanges information on other network nodes, and the links between them. For LU-LU sessions, TRS provides the best route between any two LUs. In APPN end nodes and low-entry networking nodes, TRS collects information on links and adjacent nodes.

In APPN network nodes, TRS creates and maintains the class-of-service (COS) database and a copy of the *network topology database*. The network topology database contains information on APPN network node connections to other network nodes and connection networks. (A *connection network* is a method of defining an APPN node attachment to a shared-access transport facility, reducing intermediate node routing and definition requirements.)

In APPN end nodes, TRS creates and maintains the COS database, and maintains the *local topology database* (also maintained by TRS at the network node). The local topology database contains information on connections involving the local end nodes: end node-to-end node, end node-to-network node, and end node-to-virtual routing node.

For LU-LU sessions, TRS computes the optimal route through an APPN network between the two nodes on which the LUs reside. A route in an APPN network is an ordered sequence of nodes and transmission groups (TGs) that represents a path from an origin to a destination, called a Route Selection Control Vector (RSCV). In APPN end nodes, TRS uses the local database to select possible transmission groups from the end node to an adjacent node. In APPN network nodes, TRS uses the information provided by the two end nodes, together with the information in the network node's COS and topology database, to select a route.

Configuration Services

Configuration services (CS) manages links to adjacent APPN nodes. The APPN node operator facility (NOF) initializes configuration services through Site Manager.

The basic configuration functions are:

- Node definition
- Interfaces
- Ports
- Adjacent link stations
- Connection networks
- Directory services

Refer to Chapter 3, "Editing APPN Parameters," for detailed information on configuring APPN nodes.

Management Services

Management services (MS) controls and monitors the node's resources. If an error condition occurs, APPN receives or generates event messages about resources and conditions. For information on the APPN event messages, refer to *Event Messages Database.*

For More Information About APPN

For more information about APPN, IBM SNA, and related subjects, refer to the following IBM publications:

- *IBM Systems Network Architecture: LU6.2 Reference: Peer Protocols* (SC31-6808)
- *IBM Systems Network Architecture: APPN Architecture Reference* (SC30-3422)
- *IBM Systems Network Architecture: Management Services* (SC30-3346)
- *IBM APPN Architecture and Product Implementation Tutorial* (GG24-3669)
- *IBM AS/400 Advanced Peer-to-Peer Networking* (GG24-3287)
- *IBM Systems Network Architecture: Technical Overview* (GC30-3073)
- *IBM Systems Network Architecture: Concepts and Products* (GC30-3072)
- *IBM System Network Architecture: Introduction to Sessions between Logical Units* (GC20-1869)

Chapter 2
Enabling APPN Services

This chapter describes how to enable APPN services on:

- Logical Link Control 2 (LLC2) media, including Ethernet, token ring, and frame relay
- LLC2 media using Source Routing Bridge (SRB) encapsulation formats over Ethernet, FDDI, SMDS, frame relay, and Point-to-Point Protocol(PPP)
- Synchronous Data Link Control (SDLC) links in point-to-point and multipoint networks

This chapter assumes that you have read *Configuring and Managing Routers with Site Manager* and that you have:

1. Opened a configuration file
2. Specified router hardware if this a local mode configuration file
3. Selected the connector on which you are enabling APPN

Using the Parameter Descriptions

Each APPN parameter description provides information about default settings, valid parameter options, the parameter function, instructions for setting the parameter, and the Management Information Base (MIB) object ID.

The Technician Interface allows you to modify parameters by issuing **set** and **commit** commands with the MIB object ID. This process is equivalent to modifying parameters using Site Manager. For more information about using the Technician Interface to access the MIB, refer to *Using Technician Interface Software*.

Caution: The Technician Interface does not verify that the value you enter for a parameter is valid. Entering an invalid value can corrupt your configuration.

Enabling APPN over LLC2 Interfaces

When you configure APPN on LLC2 interfaces, such as Ethernet and token ring, the Configuration Manager requests media access control (MAC) and service access point (SAP) addresses. On synchronous interfaces where you are configuring APPN over frame relay, the Configuration Manager requests a data link connection identifier (DLCI) address and a SAP address.

To enable APPN on Ethernet, token ring, or Nortel Networks synchronous interfaces using frame relay:

1. **Select APPN from the Select Protocols window.**

   This menu appears after you select either a link or net module connector that requires a wide area network (WAN) circuit. The Configuration Manager automatically selects the LLC2 option.

2. **Click on OK.**

   For frame relay and Ethernet networks, the “Use Source Route Encapsulation?” dialog box appears (Figure 2-1).

3. **Click on Cancel if you are configuring standard LLC over Ethernet, or if you are configuring frame relay using the RFC 1490 routing standard.**

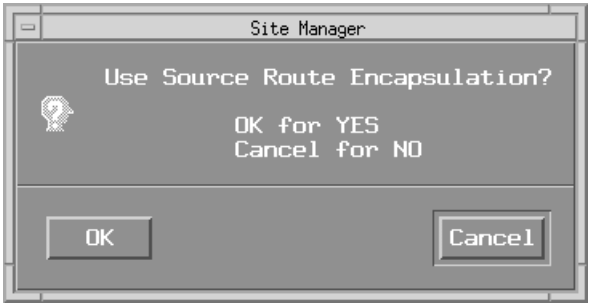

Figure 2-1. Source Route Encapsulation Dialog Box

To configure Nortel Networks SRB over Ethernet or frame relay using the RFC 1490 bridging standard, click on OK and refer to the next section, "Enabling APPN over LLC2 Interfaces Using SRB," for information on the additional screens that appear.

The APPN Local Node Name Configuration window appears (Figure 2-2).

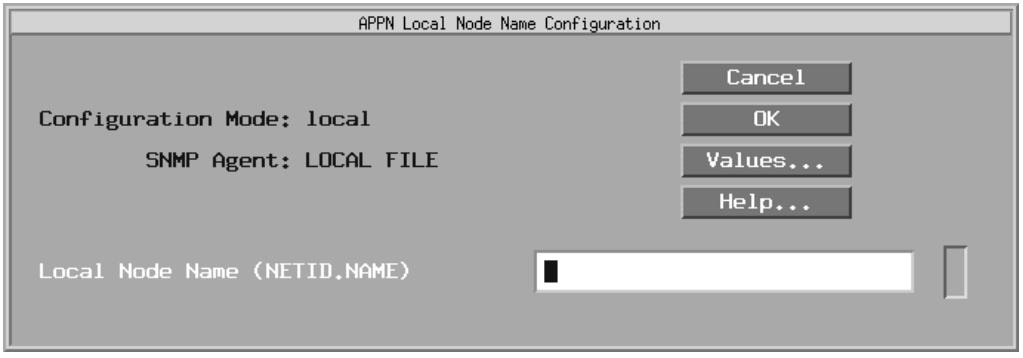

Figure 2-2. APPN Local Node Name Configuration Window

4. **Specify the Local Node Name parameter, as follows:**

Parameter:	**Local Node Name**
Default:	None
Options:	Any valid name with up to 17 characters in the format *<NETID>.<CPNAME>*; *NETID* is the global network name with up to 8 characters followed by a period, and *CPNAME* is the control point name with up to 8 characters. (Do not enter the angle brackets; these are a convention used to indicate a substitutable variable.)
Function:	The Local Node Name parameter identifies the unique name of the network and the Nortel Networks router node name.
Instructions:	Enter the node name by first specifying up to 8 characters in the network ID name, type a period, then enter a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, NETWORKA.SYSTEMA is a valid entry for the Local Node Name parameter.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.4

5. **Click on OK to add the local node name.**

   For frame relay configurations, the APPN/FR Configuration window appears (Figure 2-3). If you are configuring standard LLC over Ethernet, the Configuration Manager displays the APPN Configuration window where you specify a MAC address instead of the DLCI address.

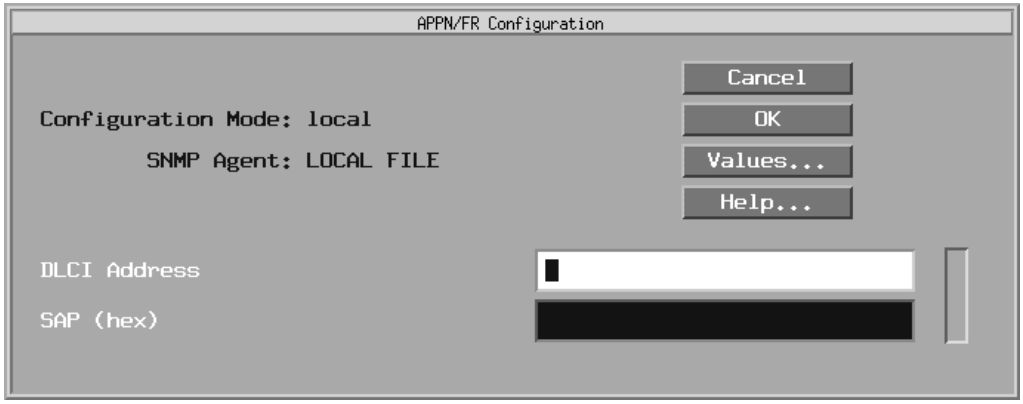

Figure 2-3. APPN/FR Configuration Window

6. Specify the DLCI Address (for frame relay only), MAC Address, and SAP parameters, as follows:

Parameter: **DLCI Address**

Default: None

Options: Valid range depends on the frame relay address length as follows:

Address Length	Range
2 bytes	16-1007
3 bytes	1024-64511
4 bytes	131072-8257535

Function: The DLCI is the frame relay PVC identification number. The frame relay network uses the DLCI to direct basic data flow.

Instructions: Enter a decimal number within the valid range.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.38

Parameter:	**SAP (hex)**
Default:	None
Options:	Any unique SAP 2-digit hexadecimal value, usually 04 with APPN.
Function:	Specifies a SAP address that lets multiple applications and protocol entities in a single computer share a MAC address.
Instructions:	Enter a 2-digit hexadecimal value.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.38

Parameter:	**MAC Address**
Default:	None
Options:	Any unique 48-bit 12-digit hexadecimal MAC-level address
Function:	Specifies a unique MAC-level address for this port.
Instructions:	Enter a 12-digit hexadecimal MAC-level address in most significant bit (MSB) noncanonical format, regardless of the media.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.38

7. **Click on OK.**

   The Adjacent Link Station dialog box appears (Figure 2-4).

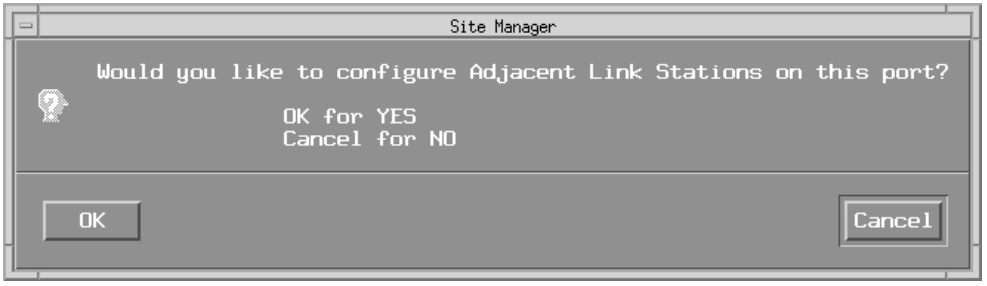

Figure 2-4. Adjacent Link Station Dialog Box

8. **Click on OK to configure APPN adjacent link station parameters now**.

   For information on configuring addjacent link stations, go to the section in Chapter 3 entitled “Editing APPN Adjacent Link Stations.”

9. **Click on Cancel.**

   Go to Chapter 3for information about configuring APPN.

Enabling APPN over LLC2 Interfaces Using SRB

If you are configuring LLC2 interfaces such as Ethernet, FDDI, SMDS, frame relay, and PPP, you can use SRB encapsulation formats. For Ethernet (Nortel Networks proprietary SRB over Ethernet) and frame relay (RFC1490 Bridging Standard), start at the Source Route Encapsulation dialog box (Figure 2-5) and proceed as follows:

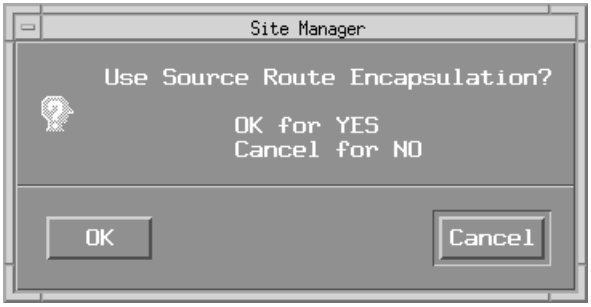

Figure 2-5. Source Route Encapsulation Dialog Box

1. **Click on OK.**

   The Source Routing Global Parameters window appears (Figure 2-6).

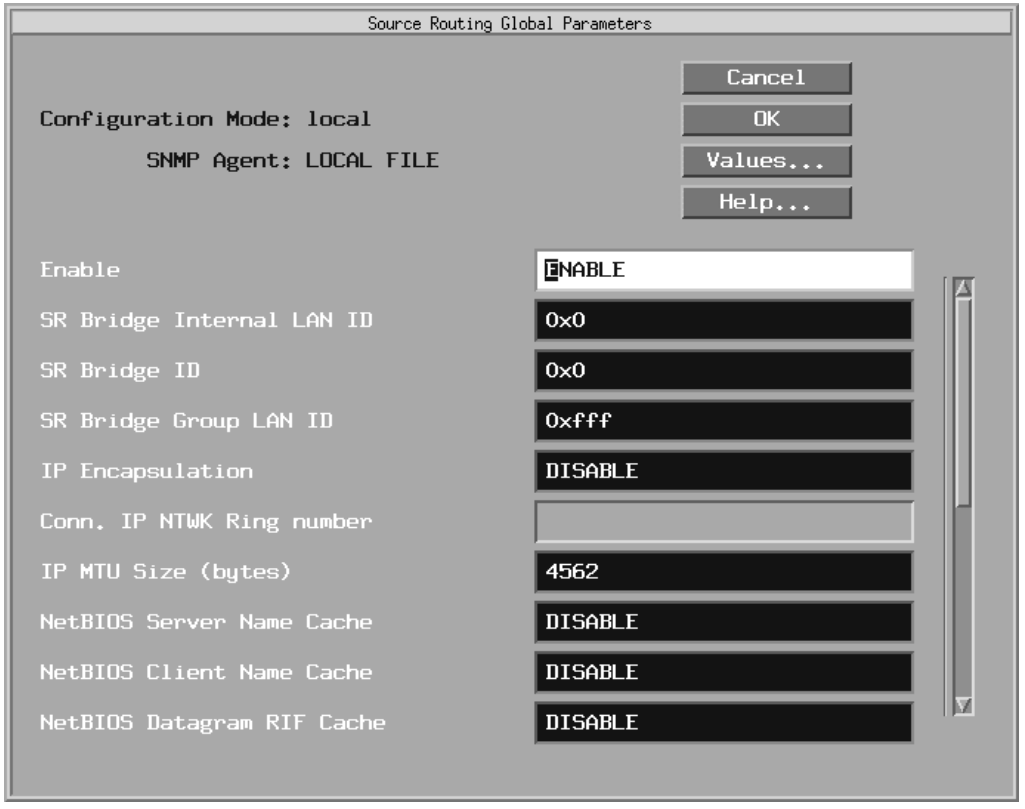

Figure 2-6. Source Routing Global Parameters Window

2. **Edit the SR Bridge Internal LAN ID and the SR Bridge ID parameters in the Source Routing Global Parameters window.**

   These are mandatory parameters that you must specify before you can proceed.

Parameter:	**SR Bridge Internal LAN ID**
Default:	0x1
Range:	0x1 to 0x0fff
Function:	Specifies this bridge's internal LAN ID.
Instructions:	Assign an internal LAN ID that is unique among all other internal LAN IDs and ring IDs in the network.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.1.2.1.4

Parameter:	**SR Bridge ID**
Default:	0x1
Range:	0x1 to 0x0f
Function:	Specifies this bridge's ID and identifies the Nortel Networks source routing bridges in the network.
Instructions:	Assign the same value to all Nortel Networks source routing bridges in the network (unless two bridges operate in parallel). The SR bridge ID must be unique among any other third-party bridge IDs in the network.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.1.2.1.5

For details about configuring the source routing parameters on this window, refer to *Configuring Bridging Services.*

3. **Click on OK.**

   The Edit SR Interface window appears (Figure 2-7).

Figure 2-7. Edit SR Interface Window

4. **Edit the Source Routing Ring Number parameter in the Edit SR Interface window.**

   This is the only parameter that you must specify before you can proceed.

Parameter:	**Source Routing Ring Number**
Default:	0x0
Range:	0x0 to 0x0fff
Function:	Identifies the ring number (ring ID) of this source routing circuit.
Instructions:	Assign a ring number (ring ID) to this source routing circuit that is unique among any other ring IDs, group LAN IDs, or internal LAN IDs in the network.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.1.2.1.6

For details on how to configure the source routing parameters on this window, refer to *Configuring Bridging Services.*

5. **Click on OK.**

   The APPN Virtual Ring Number Configuration window appears (Figure 2-8).

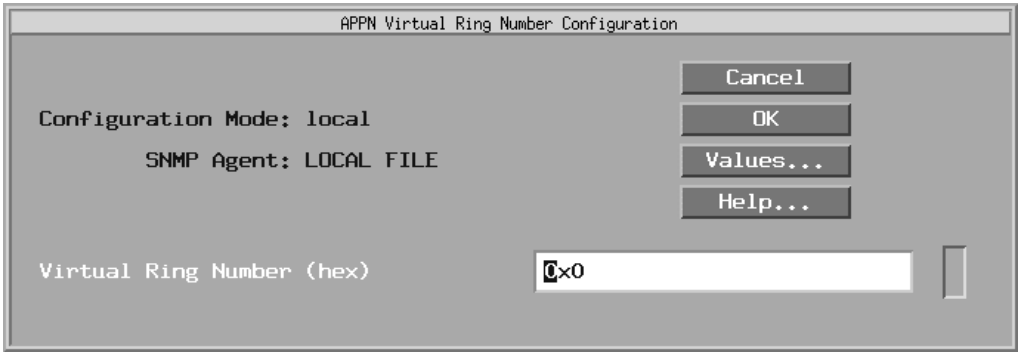

Figure 2-8. APPN Virtual Ring Number Configuration Window

6. **Edit the Virtual Ring Number parameter, as follows:**

Parameter:	**Virtual Ring Number (hex)**
Default:	None
Range:	1 to 4095
Function:	Specifies the unique SRB ring number to be used by APPN. It must be unique in the SRB network. This means that the Virtual Ring Number must be different not only from the ring IDs specified in the SRB configuration, but different also from other Nortel Networks routers running APPN on LLC2/SRB media.
Instructions:	Specify the unique LLC ring number in the range 1 to 4095.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.6.2.25

7. **Click on OK.**

   If this is the first interface for which you are configuring APPN, the APPN Local Node Name Configuration window appears (Figure 2-2). If this is not the first interface for which you are configuring APPN, the APPN Configuration window for your specific network appears. Refer to these figures and the steps that follow them to complete the APPN configuration.

Enabling APPN Interfaces over SDLC

To configure APPN on synchronous interfaces (COM1, COM2, etc.) using the SDLC protocol:

1. **Select SDLC from the WAN protocols window.**

   The Configuration Manager displays the SDLC Line Parameters window (Figure 2-9).

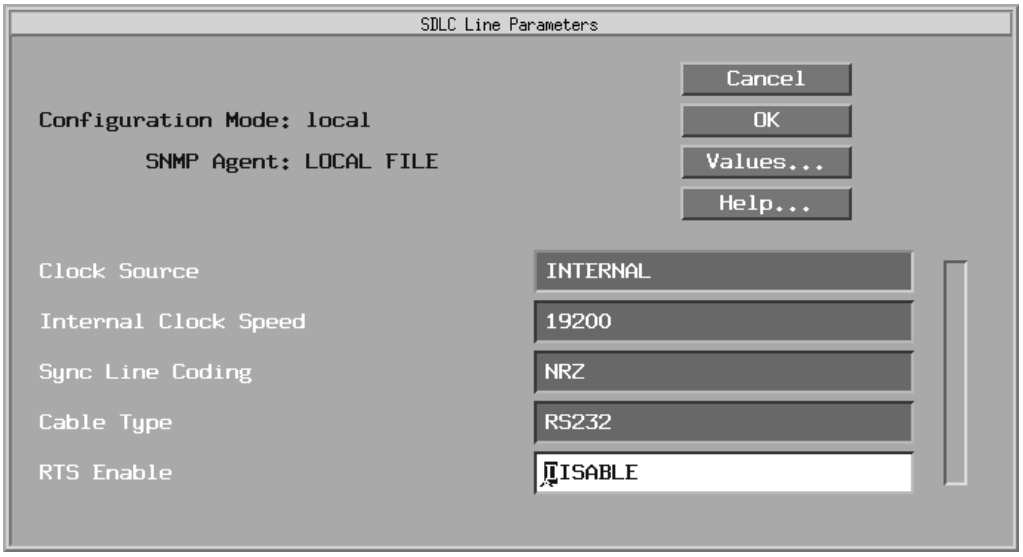

Figure 2-9. SDLC Line Parameters Window

2. **Edit the Clock Source, Internal Clock Speed, Sync Line Coding, Cable Type, and RTS Enable parameters, as follows:**

Parameter:	**Clock Source**
Default:	Internal
Options:	External | Internal
Function:	Identifies whether the router provides clocking (INTERNAL) or receives clocking (EXTERNAL) from the other device. The parameter specifies the origin of the synchronous timing signals. If you set this parameter to Internal, this router supplies the required timing signals. If you set this parameter to External, an external network device supplies the required timing signals. Use this parameter when connecting the SNA equipment directly to the router. Either the router or the SNA equipment can define the speed of the SDLC link. You must configure one device to internal clocking, and the other device to external clocking.
Instructions:	For direct connection to a control unit, such as an IBM 3174, set to Internal. For connection to a modem, set to External. For direct connection to an IBM 3745, either the router or the IBM 3745 can provide the clock source. If the IBM 3745 does not provide clocking, set to Internal.
MIB Object ID:	1.3.6.1.4.1.18.3.4.5.1.13

Parameter: **Internal Clock Speed**

Default: 19200 KB

Options: 1200 B | 2400 B | 4800 B | 7200 B | 9600 B | 19200 B | 32000 B | 38400 B | 56 KB | 64 KB | 125 KB | 230 KB | 420 KB | 625 KB | 833 KB | 1.25 MB | 2.5 MB | 5 MB

Function: Sets the clock speed of an internally supplied clock when Clock Source is set to Internal. Attached devices must be capable of operating at the specified speed. Some of the more common allowed speeds for IBM products are as follows:

-- An IBM 3274 with an V.24/RS-232 interface supports up to 9600 bps. Some support speeds up to 19200 bps.

-- An IBM 3274 with a V.35 interface supports up to 64 Kb/s.

-- An IBM 3174 with a V.24/RS-232 interface supports up to 19200 bps.

-- An IBM 3174 with a V.35 interface and running Licensed Internal Code-C supports up to 256 Kb/s.

Instructions: Click on Values and set the clock speed for the internal clock to the desired data transmission rate across the synchronous line.

This parameter is unavailable when Clock Source is set to External.

MIB Object ID: 1.3.6.1.4.1.18.3.4.5.1.14

Parameter:	**Sync Line Coding**
Default:	NRZ
Options:	NRZ | NRZI | NRZI Mark
Function:	Sets the same line coding value for all devices attached to the same SDLC link. You can change the value of this parameter to match the line coding of a device at the other end of the line. This parameter is relevant only for the AN and ASN routers, and the Octal Sync module. Other Nortel Networks router platforms use NRZ encoding. *NRZ* -- Indicates Non-Return to Zero encoding. *NRZI* -- Indicates Non-Return to Zero Inverted encoding. *NRZI Mark* -- Indicates Non-Return to Zero Inverted Mark encoding.
Instructions:	Select NRZ or NRZI. NRZI Mark is not generally used for SDLC.
MIB Object ID:	1.3.6.1.4.1.18.3.4.5.1.88

Parameter:	**Cable Type**
Default:	RS232
Options:	Null | RS232 | RS422 | V35 | X21
Function:	Specifies the cable interface to the network.
Instructions:	Click on Values and select the installed cable interface type.
MIB Object ID:	1.3.6.1.4.1.18.3.4.5.1.83

Parameter:	**RTS Enable**
Default:	Disable
Options:	Enable | Disable
Function:	Controls the toggling of the Request to Send (RTS) signal on the interface.
Instructions:	Click on Values and select Enabled or Disabled. For manual dial modems (2-wire), set this parameter to Enabled. For leased modems (4-wire), set this parameter to Disabled.
MIB Object ID:	1.3.6.1.4.1.18.3.4.5.1.16

3. **Click on OK.**

   The Select Protocols window appears (Figure 2-10).

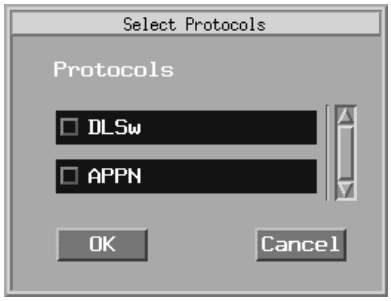

Figure 2-10. Select Protocols Window

4. **Select APPN and click on OK.**

   If this is the first interface for which you are configuring APPN, the APPN Local Node Name Configuration window appears (Figure 2-11). Otherwise, the APPN SDLC Address Configuration window appears (Figure 2-12).

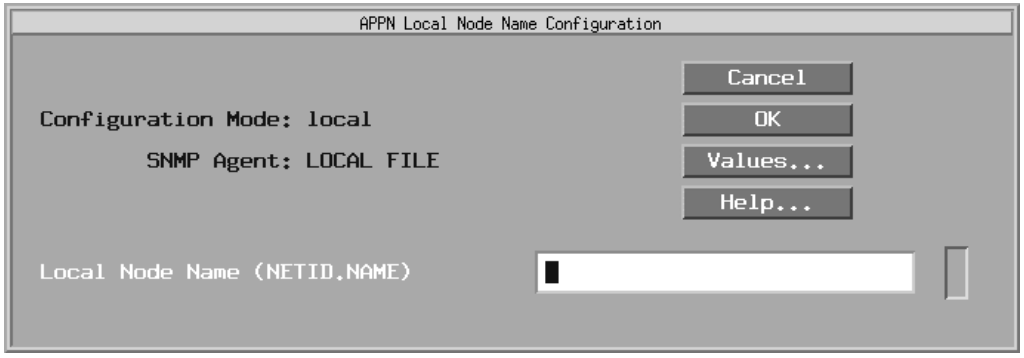

Figure 2-11. APPN Local Node Name Configuration Window

5. **Specify the Local Node Name parameter.**

If this is not the first APPN interface on this router, omit this step and go to Step 7.

Parameter: **Local Node Name**

Default: None

Options: Any valid name with up to 17 characters in the format *<NETID>.<CPNAME>*; *NETID* is the global network name with up to 8 characters followed by a period, and *CPNAME* is the control point name with up to 8 characters. (Do not enter the angle brackets; these are a convention used to indicate a substitutable variable.)

Function: The Local Node Name parameter identifies the unique name of the network and the Nortel Networks router node name.

Instructions: Enter the node name by first specifying up to 8 characters in the network ID name; type a period; and then enter a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, NETWORKA.SYSTEMA is a valid entry for the Local Node Name parameter.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.4

6. **Click on OK to add the local node name.**

   The APPN SDLC Address Configuration window appears (Figure 2-12).

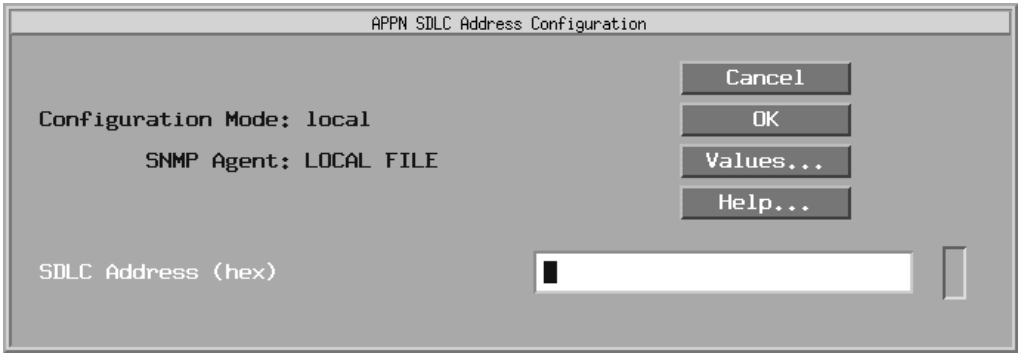

Figure 2-12. APPN SDLC Address Configuration Window

7. **Specify the SDLC address for the interface, as follows:**

Parameter:	**SDLC Address (hex)**
Default:	None
Options:	Any unique 2-digit hexadecimal SDLC-level address
Function:	Specifies a unique SDLC address for this circuit.
Instructions:	Enter a 2-digit hexadecimal address.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.38

8. **Click on OK.**

   The Adjacent Link Station dialog box appears (Figure 2-13).

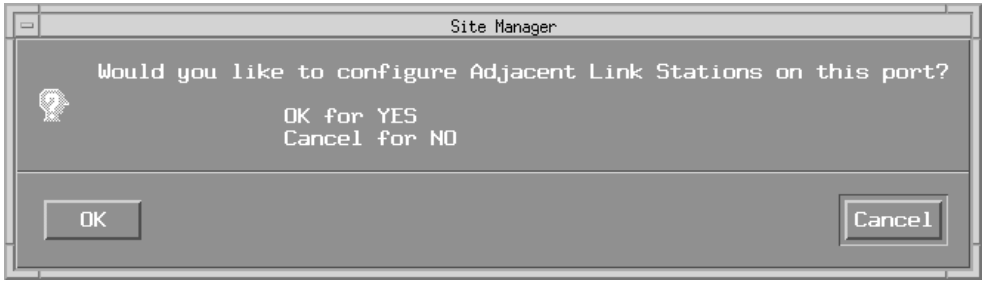

Figure 2-13. Adjacent Link Station Dialog Box

To configure APPN adjacent link station parameters now, go to the section in Chapter 3 entitled “Editing APPN Adjacent Link Stations.”

9. **Click on Cancel.**

   Go to the beginning of Chapter 3 for information about configuring APPN.

Chapter 3
Editing APPN Parameters

Once you successfully enable an APPN interface on the router, you can edit parameters and customize APPN services.

This chapter describes how to use the Configuration Manager to edit the following parameters:

- Global and advanced
- Interface and port
- Adjacent link station
- Connection network
- Directory services

The instructions assume you have already added one or more interfaces to a router configuration file that you now want to edit for APPN. (Refer to *Configuring and Managing Routers with Site Manager* to learn how to add interfaces to the configuration file.)

Using the Parameter Descriptions

Each APPN parameter description provides information about default settings, valid parameter options, the parameter function, instructions for setting the parameter, and the Management Information Base (MIB) object ID.

The Technician Interface allows you to modify parameters by issuing **set** and **commit** commands with the MIB object ID. This process is equivalent to modifying parameters using Site Manager. For more information about using the Technician Interface to access the MIB, refer to *Using Technician Interface Software*.

Caution: The Technician Interface does not verify that the value you enter for a parameter is valid. Entering an invalid value can corrupt your configuration.

Accessing APPN Parameters

You can access all APPN operational parameters from the Configuration Manager window (Figure 3-1). (Refer to *Configuring and Managing Routers with Site Manager* for instructions about how to access this window.)

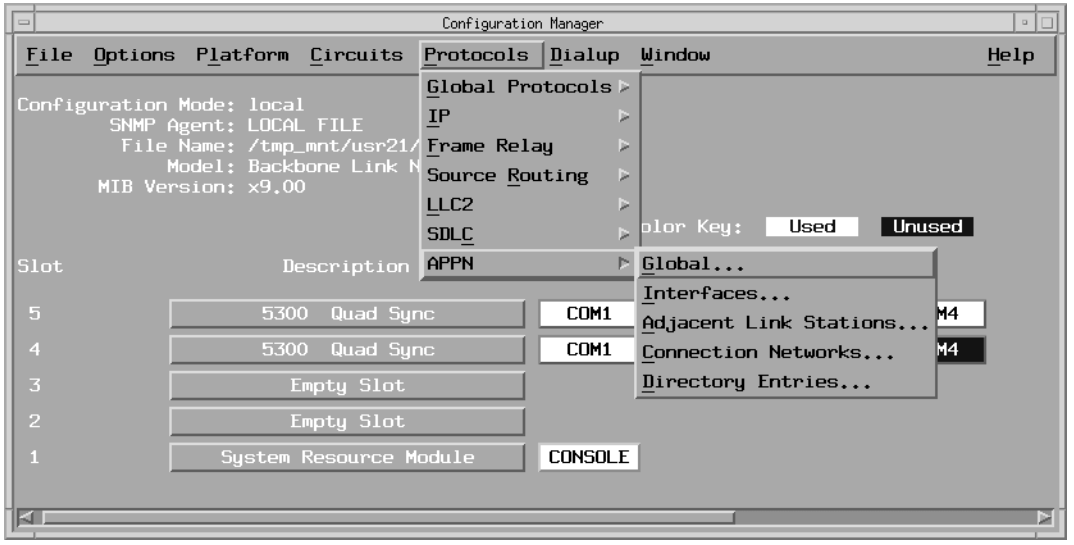

Figure 3-1. Configuration Manager Window

Editing APPN Global Parameters

To edit APPN global parameters from Configuration Manager window (Figure 3-1) and proceed as follows

1. **Select Protocols > APPN > Global.**

   The Edit APPN Global Parameters window appears (Figure 3-2).

2. **Edit the parameters you want to change.**

   Use the descriptions that follow as a guide.

3. **Click on OK to save your changes and exit the window, or select Advanced to further customize APPN global parameter settings.**

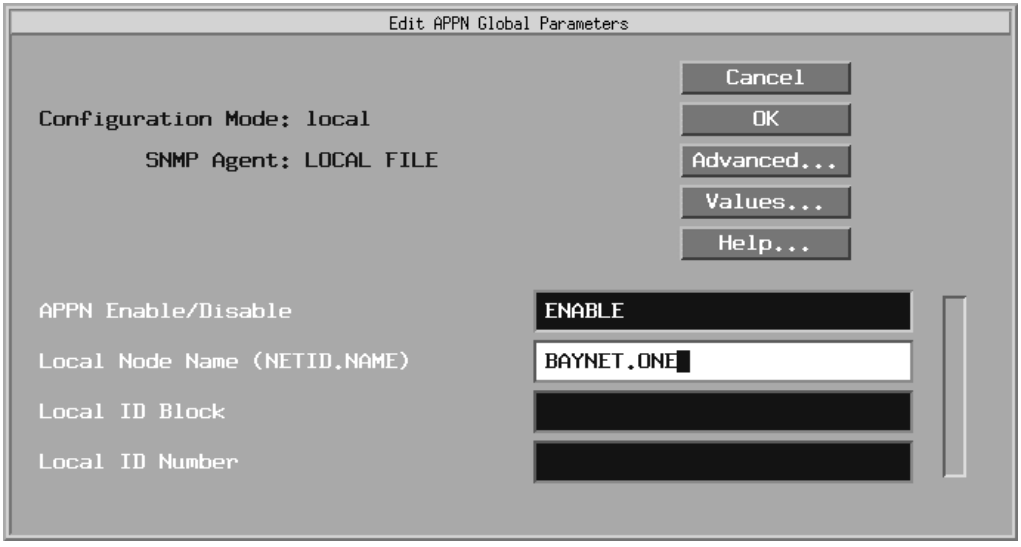

Figure 3-2. Edit APPN Global Parameters Window

Parameter:	**APPN Enable/Disable**
Default:	Enable
Options:	Enable | Disable
Function:	Globally enables or disables APPN on the router. *Disable* -- Forces every APPN interface existing on the node into the "down" (inoperative) state. *Enable* -- Reinitializes every APPN interface existing on the node; each interface maintains the most recent setting of its own Interface Enable/ Disable parameter.
Instructions:	Select Disable to force every APPN interface existing on the node into the "down" (inoperative) state. Select Enable to globally reinitialize all APPN interfaces configured on the node; each interface will maintain the most recent setting of its own Interface Enable/Disable parameter.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.2

Parameter:	**Local Node Name**
Default:	None
Options:	Any valid name with up to 17 characters in the format *<NETID>.<CPNAME>*; *NETID* is the global network name with up to 8 characters followed by a period, and *CPNAME* is the control point name with up to 8 characters
Function:	The Local Node Name parameter identifies the unique name of the network and the Nortel Networks router node name.
Instructions:	Specify up to 8 characters for the network ID name; follow with a period; then type a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, NETWORKA.SYSTEMA is a valid entry for the Local Node Name parameter.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.4

Parameter:	**Local ID Block**
Default:	None
Options:	A valid string of 3 hexadecimal digits
Function:	A unique hexadecimal value identifies the APPN product in this NN. The number is the first 3 digits of the node identification.
Instructions:	Accept the displayed value or enter 3 hexadecimal digits in this field.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.6

Parameter:	**Local ID Number**
Default:	None
Options:	A valid string of 5 hexadecimal digits (0 to 9, A,B,C,D,E,F)
Function:	Identifies the local APPN network node and is present in APPN alerts and exchange identifications (XIDs). These 5 digits are combined with the 3-digit local ID block to form a unique XID node identification. The APPN network node and the adjacent node exchange node identifications when establishing a connection.
Instructions:	Enter 5 hexadecimal digits.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.7

APPN Global Advanced Parameters

To edit the APPN global advanced parameters from the Edit APPN Global Parameters window (Figure 3-2):

1. **Click on Advanced.**

   The Advanced APPN Global Parameters window appears (Figure 3-3). This window contains general parameters associated with APPN directory services, intermediate session routing, and topology and routing services.

Figure 3-3. Advanced APPN Global Parameters Window

2. **Click on each parameter value that you want to change; then edit the displayed value.**

   Use the parameter descriptions that follow as a guide.

3. **Click on OK to save your changes and exit the window.**

Parameter:	**Route Addition Resistance**
Default:	128
Range:	0 to 255
Function:	Indicates the relative desirability of using this network node for intermediate session routing (ISR) when multiple paths exist.
Instructions:	Enter a value in the range 0 to 255. The lower the value, the more desirable the node becomes for ISR.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.21

Parameter:	**Endpoint Session RSCV Storage**
Default:	Enable
Options:	Enable | Disable
Function:	When enabled, stores route selection control vector information used by the network node if it is the endpoint (origin or destination) node in the route. This parameter is useful when you are using the Technician Interface to debug logged APPN events and statistics. Refer to *Using Technician Interface Scripts* for information on using the **show appn** command. When enabled, this parameter consumes additional memory for each endpoint session.
Instructions:	Select Enable to enable endpoint session RSCV storage. Select Disable to disable endpoint session RSCV storage.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.29

Parameter:	**Max Directory Entries**
Default:	0
Options:	A value of 0 indicates an unlimited number of entries; otherwise, any positive numeric value
Function:	Specifies the maximum number of entries that APPN stores in the directory database at the network node. The directory database stores information about network resources and their location in the APPN network.
Instructions:	Enter a value large enough for the network being managed, or specify 0 for unlimited entries.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.32

Parameter:	**Max Cached Directory Entries**
Default:	100
Options:	Any positive numeric value
Function:	Specifies the maximum number of cached directory entries that APPN stores in the local directory database at any one time. The caching can ultimately result in large local directory databases that may include out-of-date resource entries. If the maximum number is reached and if all entries are in use, new entries to be cached will replace the oldest cache entries.
Instructions:	Enter a value large enough for the network being managed. Increase the current value if the oldest valid entries are being replaced on a regular basis.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.31

Parameter:	**Network Locate Timeout (in seconds)**
Default:	60
Options:	Specify 0 to indicate no timeouts
Function:	Specifies the length of time (in seconds) before a network search times out. The network search function locates network resources and controls the flow of search requests and replies throughout the network.
Instructions:	Enter a positive time value in seconds. If directory services at the local network node does not receive a search response at the completion of this timeout value, the search is terminated. When the local network node receives the search response, the search is complete.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.33

Parameter:	**TRS Route Tree Cache Size**
Default:	8
Range:	8 through 2147483674
Function:	Specifies the size of the topology and routing services (TRS) tree database. The tree database allows a network node to cache optimal routes from the local APPN node to other network nodes (tree caching).
Instructions:	Enter a positive numeric value in the range 8 to 2147483674 to indicate the maximum number of routing trees to be stored in the database.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.34

Parameter:	**TRS Route Tree Cache Usage Limit**
Default:	8
Range:	1 through 2147483674
Function:	Specifies the maximum number of times a route tree will be used before route selection services (RSS) calculates a new route tree for that class of service (COS).
Instructions:	Enter any positive numeric value in the range 1 to 2147483674.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.35

Parameter:	**Max NNs in Topology DB (0 = unlimited)**
Default:	0
Options:	Any positive number; specify 0 to indicate an unlimited number of network nodes
Function:	Specifies the maximum number of network nodes (routers) in the network topology database.
Instructions:	Specify 0 to include all network nodes.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.36

Parameter:	**Max TGs in Topology DB (0 = unlimited)**
Default:	0
Options:	Any valid positive number; specify 0 to indicate an unlimited number of transmission groups (TGs)
Function:	Specifies the maximum number of TGs in the network topology database. A TG represents a single unidirectional connection (or link) to an adjacent link station.
Instructions:	Specify 0 to include all TGs.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.37

Parameter:	**Max Number of ISR Sessions**
Default:	1000
Range:	100 through 2147483674
Function:	Specifies the maximum number of intermediate session routing (ISR) sessions that the local network node can support concurrently.
Instructions:	Enter a value of 100 through 2147483674.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.38

Parameter:	**ISR Congestion Threshold**
Default:	900
Options:	Any positive numeric value less than the Max Number of ISR Sessions parameter setting
Function:	Specifies the maximum number of ISR sessions before the node considers itself congested, causing it to direct new sessions away. A network node is no longer congested when the number of ISR sessions drops to the setting of the ISR Decongestion Threshold parameter.
Instructions:	Enter any positive numeric value less than the setting for the Max Number of ISR Sessions parameter. In most cases, a value equal to 90% of the Max Number of ISR Sessions parameter is a reasonable value.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.39

Parameter:	**ISR Decongestion Threshold**
Default:	800
Options:	Any positive numeric value less than the ISR Congestion Threshold parameter setting
Function:	Specifies the number of active ISR sessions that the local network node must drop to before it is no longer congested. A network node is congested when the number of ISR sessions reaches the ISR congestion threshold.
Instructions:	Enter any positive numeric value that is less than the current ISR Congestion Threshold parameter setting. In most cases, a value equal to 80% of the Max Number of ISR Sessions parameter is a reasonable value.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.40

Parameter:	**Max RU Size for ISR Sessions**
Default:	4096
Range:	256 to 4096, inclusive
Function:	Specifies the maximum request unit (RU) size for the segmentation and reassembly of session and nonsession traffic during the ISR sessions.
Instructions:	Enter a positive number in the range 256 to 4096.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.41

Parameter:	**ISR Receive Pacing Window**
Default:	7
Range:	1 to 63, inclusive
Function:	Specifies the maximum number of messages that the network node can receive in one window during an ISR session. Pacing windows control the number of messages to prevent memory consumption.
Instructions:	Enter a positive number in the range 1 to 63. Entering higher values may improve performance, but will consume more memory.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.42

Parameter:	**ISR Session RSCV Storage**
Default:	Enable
Options:	Enable | Disable
Function:	Enables or disables the storage of route selection control vectors (RSCVs) during ISR sessions. This parameter is useful for debugging. When enabled, it consumes additional memory for each ISR session. The intermediate network node uses RSCV information to obtain the next node and a transmission group (TG) to the node along a route. The maximum number of APPN nodes and TGs a session can traverse is limited to the size of the RSCV.
Instructions:	Select Enable to enable ISR session RSCV storage. Select Disable to disable ISR session RSCV storage.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.43

Parameter:	**DLUR Support Enable/Disable**
Default:	Disable
Options:	Enable | Disable
Function:	Enables or disables Dependent Logical Unit Requester (DLUR) support at the network node. DLUR is an APPN component that allows dependent logical units (LU type 0,1,2,3 and dependent LU6.2) within APPN.
Instructions:	Click on Values and select Enable to start DLUR at the network node, or select Disable to stop DLUR at the network node.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.45

Parameter:	**Default DLUS Name**
Default:	None
Options:	Any valid name with up to 17 characters in the format *<NETID>.<NAME>*; *NETID* is the unique network name with up to 8 characters followed by a period, and *NAME* is the control point name with up to 8 characters
Function:	Specifies the fully qualified default name of the DLUS node that serves the PU2.0 adjacencies configured on this node. APPN uses the default name when the DLUR Support Enable/Disable parameter is set to Enable, and when the DLUR Implicit LS Support parameter is set to Enable for implicit link stations on the port.
Instructions:	If the DLUR Support Enable/Disable parameter is set to Enable, type up to 8 characters for the network ID; follow with a period, and then type a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, APPNNODE.DLUR is a valid entry for this parameter.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.54

Parameter:	**Default Backup DLUS Name**
Default:	None
Options:	Any valid name with up to 17 characters in the format *<NETID>.<NAME>*; *NETID* is the unique network name with up to 8 characters followed by a period, and *NAME* is the control point name with up to 8 characters
Function:	Specifies the fully qualified default backup name of the DLUS node that serves PU2.0 adjacencies configured on this node. APPN uses the default backup name when the DLUR Support Enable/Disable parameter is set to Enable, and when the DLUR Implicit LS Support parameter is set to Enable for implicit link stations on the port.
Instructions:	If the DLUR Support Enable/Disable parameter is set to Enable, type up to 8 characters for the network ID name; follow with a period, and then type a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, APPNNODE.DLUR is a valid entry for this parameter.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.55

Parameter:	**DLUR-DLUS RSCV Storage**
Default:	Enable
Options:	Enable | Disable
Function:	Enables or disables the storage of route selection control vectors (RSCVs) during DLUR/DLUS sessions. This parameter is useful for network monitoring and debugging. When enabled, it will consume additional memory for each DLUR/DLUS session. It is *not* used if the DLUR Support Enable/Disable parameter is set to Disable.
Instructions:	Click on Values and select Enable to enable DLUR-DLUS RSCV storage. Select Disable to disable DLUR-DLUS RSCV storage.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.44

Parameter:	**HPR Support**
Default:	Enable
Options:	Enable | Disable
Function:	Enables HPR on this node.
Instructions:	Click on Values and select Enable or Disable.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.50

Parameter:	**HPR Path Switch Controller Support**
Default:	Disable
Options:	Enable | Disable
Function:	Enables this node as an HPR patch switch controller/initiator. This parameter is available when the HPR Support parameter is set to Enable. Typically, you only set this parameter to Enable if your network node is a mobile or wireless (satellite communications) partner. The Enable setting prevents unneeded path switch attempts by the nonmobile partner.
Instructions:	Click on Values and select Enable or Disable.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.51

Editing APPN Interfaces and Ports

To edit APPN Interface parameters, begin at the Configuration Manager window (refer to Figure 3-1) and proceed as follows:

1. **Select Protocols > APPN > Interfaces.**

   The APPN Interface List window appears (Figure 3-4).

2. **Edit those parameters you want to change, using the APPN configuration windows that appear.**

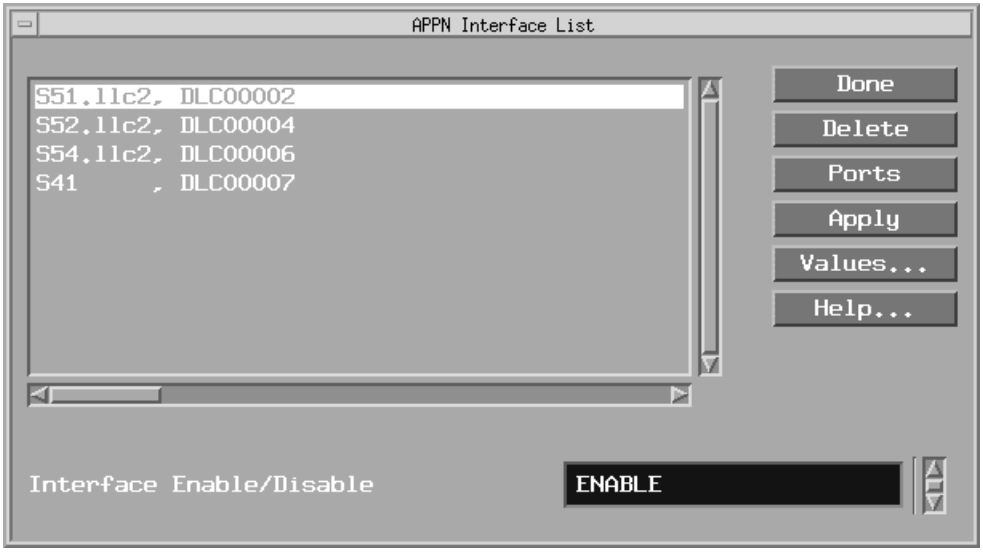

Figure 3-4. APPN Interface List Window

3. **Click on Apply to save your changes.**
4. **Click on Done to exit the window.**

   To display and enable (or disable) the current port(s) on an interface, add additional ports to the interface, delete ports, or edit advanced port parameters, click on Ports.

Parameter:	**Interface Enable/Disable**
Default:	Enable
Options:	Enable | Disable
Function:	Enables or disables APPN routing on this interface.
	Enable -- Initializes the selected APPN interface. You can also use the Enable setting to initialize an existing APPN interface that you disabled earlier.
	Disable -- Forces the APPN interface into the “down” (inoperative) state.
Instructions:	Select Disable to disable APPN routing over this interface.
	Select Enable to enable or reenable APPN routing over this interface.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.2.1.2

Deleting APPN Interfaces

To delete an interface from the APPN Interface List window (refer to Figure 3-4), select the interface, then click on Delete. The system software deletes the interface entry from the APPN configuration.

Editing APPN Ports

The APPN Interface List window (refer to Figure 3-4) allows you to enable or disable APPN ports, add and delete APPN ports on existing interfaces, and edit advanced port parameters. From the APPN Interface List window,

1. **Select Ports.**

   The APPN Port List window appears (Figure 3-5).

2. **Highlight the port you want to modify.**

   The parameter values associated with that interface appear in the parameters window and change dynamically with each port that you select.

3. **Click on Apply to save your changes.**

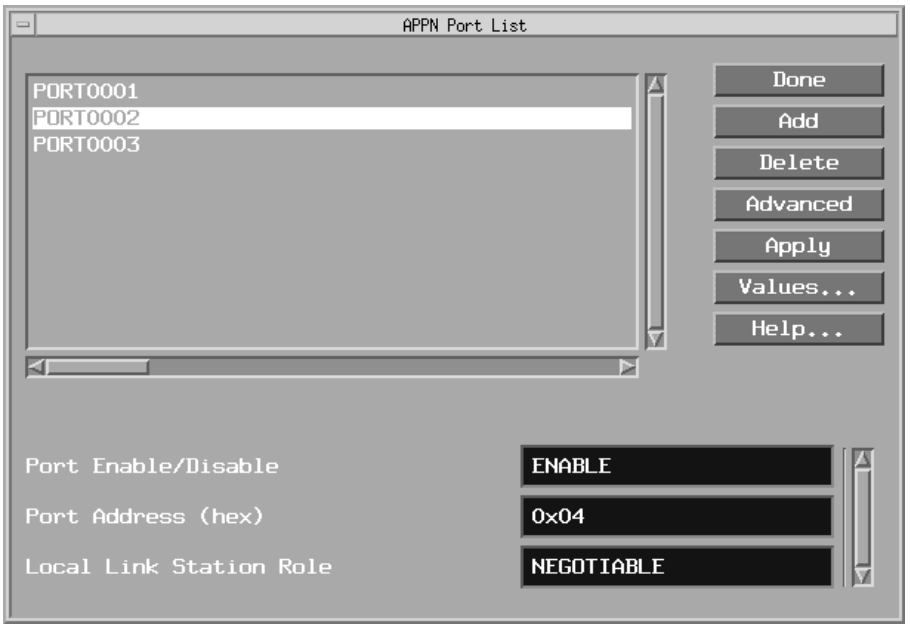

Figure 3-5. APPN Port List Window

4. **Click on Done to exit the window.**

Parameter:	**Port Enable/Disable**
Default:	Enable
Options:	Enable | Disable
Function:	Enables or disables APPN routing on this port.
	Enable -- Initializes the selected APPN port. You can also use the Enable setting to initialize an existing APPN port that you disabled earlier.
	Disable -- Forces the APPN port into the “down” (inoperative) state.
Instructions:	Select Disable to disable APPN routing over this port.
	Select Enable to enable or reenable APPN routing over this port.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.2

Parameter:	**Port Address**
Default:	None
Options:	None
Function:	Specifies the interface address for this port.
Instructions:	This is the MAC address, SDLC address, or DLCI and SAP address that you specified when you added the original circuit to the interface. A MAC address starts with the 0x prefix and ends with the SAP value.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.38

Parameter:	**Local Link Station Role**
Default:	Negotiable
Options:	Negotiable | Primary | Secondary
Function:	Specifies the initial role of the local network node when activating adjacent link stations through this port. *Negotiable* means that the local network node can be either primary or secondary and the actual role is determined during link activation. A link between the two nodes may require that one link station takes the role of *primary* link station and one link station takes the role of *secondary* link station.
Instructions:	Click on Values to display the options and select Negotiable, Primary, or Secondary.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.8

Deleting APPN Ports

To delete a port from an interface on the APPN Port List window (refer to Figure 3-5), select the port, then click on Delete. The system software deletes the entry from the APPN configuration.

Adding Ports to an APPN Interface

To add a port to an APPN interface, display the APPN Port List window (Figure 3-5) and proceed as follows:

1. **Click on Add.**

   The APPN Port Configuration or the APPN/FR Port Configuration window appears (Figure 3-6).

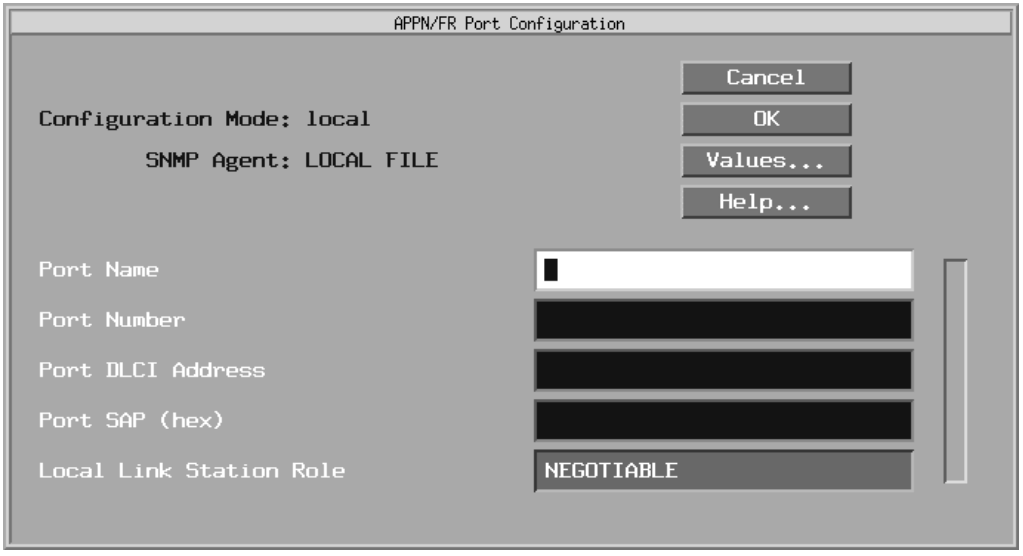

Figure 3-6. APPN/FR Port Configuration Window

2. **Enter values for the Port Name, Port Number, Port MAC Address or Port DLCI Address, Port SAP, and Local Link Station Role parameters.**

   If you are configuring SDLC, the SDLC Address parameter appears instead of the Port MAC Address parameter. If you are configuring frame relay on an LLC2 interface, the Port DLCI Address parameter appears.

3. **Click on OK to save your entries to the configuration file.**

   The APPN Port List window (refer to Figure 3-5) reappears.

Parameter: **Port Name**

Default: None

Options: Up to 8 alphanumeric uppercase characters

Function: Specifies the name of the newly added port.

Instructions: Enter up to 8 alphanumeric uppercase characters with no blank spaces (leading, trailing, or embedded).

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.15

Parameter: **Port Number**

Default: None

Options: Any unique 3-digit number

Function: Specifies a unique number to identify this port, if more than one port is configured on an interface.

Instructions: Enter any 3-digit value.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.16

Parameter: **Port DLCI Address**

Default: None

Options: Valid range changes based on the frame relay address length as follows:

Address Length	Range
2 bytes	16-1007
3 bytes	1024-64511
4 bytes	131072-8257535

Function: The DLCI is the frame relay PVC identification number. The frame relay network uses the DLCI to direct basic data flow.

Instructions: Enter a decimal number within the valid range.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.38

Parameter:	**Port MAC Address**
Default:	None
Options:	Any unique 48-bit, 12-digit hexadecimal MAC-level address
Function:	Specifies a unique MAC-level address, DLCI (for frame relay), or SDLC address.
Instructions:	Enter a 12-digit MAC hexadecimal address in MSB non-canonical form (regardless of the media), a DLCI address, or an SDLC address.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.38

Parameter:	**Port SAP (hex)**
Default:	None
Options:	Any unique SAP 2-digit hexadecimal value, usually 04
Function:	Specifies a SAP address that lets multiple applications and protocol entities in a single computer share a MAC address.
Instructions:	Enter a 2-digit hexadecimal value.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.38

Parameter:	**SDLC Address (hex)**
Default:	None
Options:	Any unique 2-digit hexadecimal SDLC-level address
Function:	Specifies a unique SDLC address for this circuit.
Instructions:	Enter a 2-digit hexadecimal address.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.38

Parameter:	**Local Link Station Role**
Default:	Negotiable
Options:	Negotiable | Primary | Secondary
Function:	Specifies the initial role of the local network node when activating adjacent link stations through this port. *Negotiable* means that the local network node can be either primary or secondary and the actual role is determined during link activation. A link between the two nodes may require one link station to take the role of *primary* link station and the other link station to take the role of *secondary* link station.
Instructions:	Click on Values to display the options and select Negotiable, Primary, or Secondary.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.8

Editing APPN Advanced Port Parameters

To edit the APPN advanced port parameters, display the APPN Port List window (refer to Figure 3-5) and

1. **Click on Advanced.**

   The APPN Port window appears (Figure 3-7).

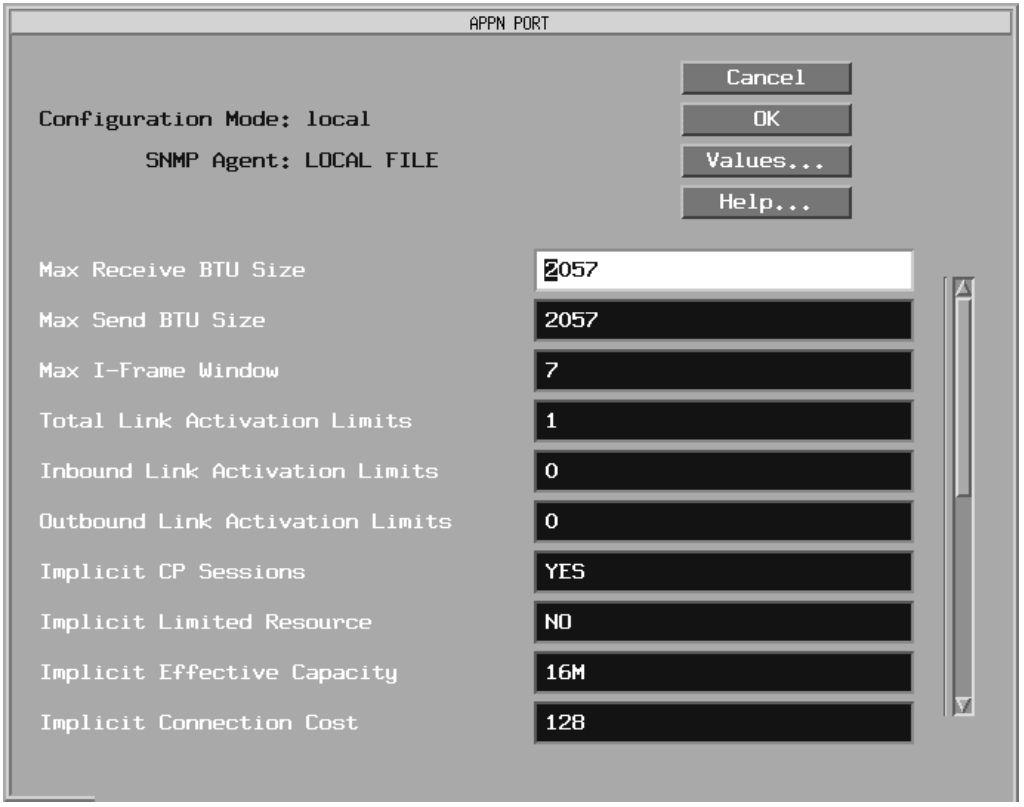

Figure 3-7. APPN Port Window

2. **Click on each parameter value that you want to change, then enter a new value.**
3. **Click on OK to save your changes and return to the APPN Port List window (Figure 3-5).**

Parameter: **Max Receive BTU Size**

Default: 2057

Range: 256 to 4105

Function: Specifies the maximum Basic Transmission Unit (BTU) size that this network node can receive. Each link station determines its own maximum BTU size based on local node definitions and exchange identification (XID) information received from the interface and the adjacent link station.

Instructions: Enter a number in the range 256 to 4105 that the node can handle. The minimum setting for HPR links is 768.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.9

Parameter: **Max Send BTU Size**

Default: 2057

Range: 256 to 4105

Function: Specifies the maximum Basic Transmission Unit (BTU) size that can be sent over this port. Each link station determines its own maximum send BTU size based on local node definitions and exchange identification (XID) information received from the interface and the adjacent link station.

Instructions: Enter a number in the range 256 to 4105. For Ethernet networks, the maximum send BTU size should be less than or equal to 1500. For synchronous media, the maximum send BTU size should be less than or equal to the synchronous maximum transmission unit. The minimum setting for HPR links is 768.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.24

Parameter:	**Max I-Frame Window**
Default:	7
Options:	A numeric value not exceeding 127
Function:	Specifies the maximum number of information frames (I-frames) that the local network node can receive before it sends an acknowledgment.
Instructions:	Enter a number in the range 1 to 127.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.10

Parameter:	**Total Link Activation Limits**
Default:	1
Range:	0 to 256; see Table 3-1
Function:	Specifies the link activation limit for this port. The value is the maximum number of inbound and outbound link stations that the port will allow in this configuration. The maximum value depends on the setting of the Local Link Station Role parameter and the type of port, as listed in Table 3-1.
Instructions:	Specify a value in the range 0 to 256. The value must be greater than or equal to the combined settings for the Inbound Link Activation Limits and Outbound Link Activation Limits parameters.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.17

Parameter:	**Inbound Link Activation Limits**
Default:	0
Range:	0 to 256; see Table 3-1
Function:	Specifies the inbound link activation limit for this port. The value is the maximum number of inbound link stations that the port will allow in this configuration.
Instructions:	Specify a value in the range 0 to 256. This value plus the current setting for the Outbound Link Activation Limits parameter must be less than or equal to the current Total Link Activation Limits parameter setting.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.18

Parameter: **Outbound Link Activation Limits**

Default: 0

Range: 0 to 256; see Table 3-1

Function: Specifies the maximum outbound link activation limit for this port. The value is the maximum number of outbound link stations that the port will allow in this configuration.

Instructions: Specify a value in the range 0 to 255. This value plus the current setting for the Inbound Link Activation Limits parameter must be less than or equal to the Total Link Activation Limits parameter setting.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.19

Table 3-1. Link Activation Limit Default Values

Port Type	Local Link Station Role	Total Link Activation Limit	Inbound Link Activation Limits	Outbound Link Activation Limits
Leased	Secondary	1	1	0
Leased	Negotiable	1	0	0
Leased	Primary	256	0	256
SATF	any	256(x+y)	128(x)	128(y)

Parameter:	**Implicit CP Sessions**
Default:	Yes
Options:	Yes | No
Function:	Specifies whether CP-to-CP sessions are permitted for dynamic link stations. Dynamic link stations are link stations that are not defined on this port, but are activated by the adjacent node.
Instructions:	Click on Values and select Yes or No.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.25

Parameter:	**Implicit Limited Resource**
Default:	No
Options:	Yes | No
Function:	Specifies whether dynamic link stations on this port should be defined as limited resources. A *limited resource* link station deactivates after the number of sessions using the port drops to zero.
Instructions:	Click on Values and select Yes or No.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.26

Parameter:	**Implicit Effective Capacity**
Default:	16M
Options:	1200 2400 4800 7200 9600 14400 19200 48000 56000 64000 4M 10M 16M Maximum
Function:	The Effective Capacity is the highest bit-transmission rate that the TG can obtain before being considered overloaded. The link bandwidth and maximum load factor determine this value. TGs to dynamic link stations on this port use this value.
Instructions:	Click on Values and select a number from the list.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.27

Parameter:	**Implicit Connection Cost**
Default:	128
Range:	0 to 255, inclusive
Function:	Specifies the relative cost (per connect time) of using a TG to dynamic link stations on this port. A value of 0 indicates no cost, and a value of 255 indicates maximum cost. The cost per connect time is typically based on the applicable tariffs for the transmission facility this TG uses. An X.25 network, for example, may have a high connection cost for dynamic link stations.
Instructions:	Enter a number in the range 0 to 255.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.28

Parameter:	**Implicit Byte Cost**
Default:	128
Range:	0 to 255, inclusive
Function:	Specifies the relative cost of transmitting a byte over this TG to a dynamic link station on this port. A value of 0 indicates no cost, and a value of 255 indicates maximum cost. An X.25 network, for example, may have a high byte cost for dynamic link stations.
Instructions:	Enter a number in the range 0 to 255.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.29

Parameter:	**Implicit Security**
Default:	Nonsecure
Options:	Nonsecure Public-Switched Underground Conduit Encrypted Guarded radiation Maximum
Function:	Specifies the security level of the TG to the dynamic link stations on this port.
Instructions:	Click on Values and select one of the common definitions indicated under Options.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.30

Parameter:	**Implicit Delay**
Default:	Negligible
Options:	Negligible Terrestrial Packet Long Maximum
Function:	Specifies the propagation delay, or the relative amount of time that it takes for a signal to travel the length of a TG to dynamic link stations on this port.
Instructions:	Click on Values and select a common definition indicated under Options.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.31

Parameter:	**Implicit User-Defined 1**
Default:	128
Range:	0 to 255
Function:	Specifies the first user-defined TG characteristic to a dynamic link station on this port.
Instructions:	Enter a value in the range 0 to 255.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.32

Parameter:	**Implicit User-Defined 2**
Default:	128
Range:	0 to 255
Function:	Specifies the second user-defined TG characteristic to a dynamic link station on this port.
Instructions:	Enter a value in the range 0 to 255.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.33

Parameter:	**Implicit User-Defined 3**
Default:	128
Range:	0 to 255
Function:	Specifies the third user-defined TG characteristic to a dynamic link station on this port.
Instructions:	Enter a value in the range 0 to 255.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.34

Parameter:	**DLUR Implicit LS Support**
Default:	Disable
Options:	Enable | Disable
Function:	Enables DLUR for implicit link stations on this port. This parameter is available when the DLUR Support Enable/Disable parameter is set to Enable.
Instructions:	Click on Values and select Enable or Disable.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.40

Parameter:	**HPR Implicit LS Support**
Default:	Enable
Options:	Enable | Disable
Function:	Enables HPR for implicit link stations on this port. This parameter is available when the HPR Support parameter is set to Enable.
Instructions:	Click on Values and select Enable or Disable.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.35

Parameter:	**LLC Error Recovery Under HPR**
Default:	Disable
Options:	Enable | Disable
Function:	Enables or disables LLC error recovery on implicit link stations on this port. This parameter is available when the global HPR Support parameter is set to Enable, and when the HPR Implicit LS Support parameter is set to Enable on this port.
Instructions:	Click on Values and select Enable or Disable.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.36

Parameter:	**Implicit Link Deactivation Time**
Default:	120
Range:	5 to 255
Function:	Specifies the time (in seconds) before implicit link stations on this port deactivate if it is an HPR limited resource. This parameter is available when the Implicit Limited Resource is set to Yes, and when the HPR Support and the HPR Implicit LS Support parameters are set to Enable.
Instructions:	Enter a value in the range 5 to 255, inclusive.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.37

Parameter:	**HPR UI SAP**
Default:	C8
Options:	Any 2-digit hexadecimal value
Function:	Specifies the local HPR service access point address for unnumbered information (UI) frames on this port. A UI frame is an LLC frame type on which LLC does not perform link-level error recovery. This parameter is available when HPR Support is set to Enable. In base APPN/LLC2 configurations, LLC2 performs link-level recovery by sending information frames (I-frames). If you disable link-level error recovery with the HPR Link-Level Error Recovery parameter, APPN sends the HPR network layer packets as UI frames, since RTP performs the link-level error recovery on an end-to-end basis.
Instructions:	Enter any 2-digit hexadecimal value. The 0x prefix is optional. For example, the value C8 uses the 0x prefix.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.39

Editing APPN Adjacent Link Stations

To edit APPN Adjacent Link Station parameters, begin at the Configuration Manager window (refer to Figure 3-1) and

1. **Select Protocols > APPN > Adjacent Link Stations.**

   The APPN Adjacent Link Station List window appears (Figure 3-8).

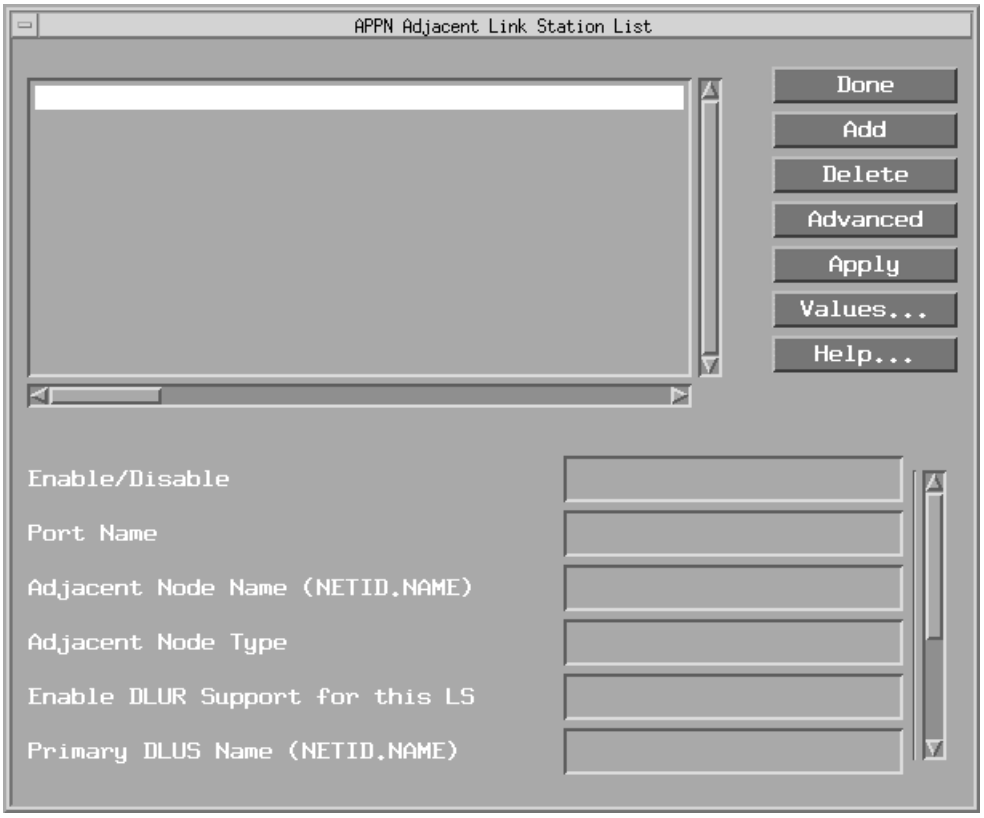

Figure 3-8. APPN Adjacent Link Station List Window

2. **Edit those parameters you want to change.**

   If the window appears without any adjacent link stations in the list, go to the section “Adding Adjacent Link Stations.”

3. **Click on Apply to save your changes.**
4. **Click on Done to exit the window.**

   To edit the advanced adjacent link station parameters, click on Advanced and go to the section “Editing Advanced Adjacent Link Station Parameters.”

Parameter:	**Enable/Disable**
Default:	Enable
Options:	Enable | Disable
Function:	Enables or disables the adjacent link station highlighted in the APPN Adjacent Link Station List window. *Enable* -- Initializes the selected adjacent link station. You can also use the Enable setting to initialize an existing adjacent link station port that you disabled earlier. *Disable* -- Forces the adjacent link station into the “down” (inoperative) state.
Instructions:	Click on Values and select Enable or Disable. Select Disable to disable the adjacent link station. Select Enable to enable or reenable the adjacent link station.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.2

Parameter:	**Port Name**
Default:	None
Options:	Up to 8 alphanumeric uppercase characters
Function:	Specifies the name of the port supporting the adjacent link station.
Instructions:	Enter up to 8 alphanumeric uppercase characters with no blank spaces (leading, trailing, or embedded).
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.4

Parameter:	**Adjacent Node Name**
Default:	None
Options:	Any valid name with up to 17 characters in the format *<NETID>.<NAME>*; *NETID* is the unique network name with up to 8 characters followed by a period, and *NAME* is the control point name with up to 8 characters
Function:	Identifies the name of the network and the adjacent node name.
Instructions:	Type to 8 characters for the network ID name, follow with a period, then type a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, APPNNODE.CPONE is a valid entry for the Adjacent Node Name parameter.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.6

Parameter:	**Adjacent Node Type**
Default:	LEARN
Options:	LEARN NN EN BACK LEVEL LEN NODE HOST XID 3 HOST XID 0 DSPU XID DSPU NO XID
Function:	Specifies the type of adjacent link station node.
Instructions:	Click on Values and select an adjacent node type, as indicated under Options. *LEARN* -- APPN automatically learns the type of adjacent link station. *NN* -- Network Node *EN* -- End Node *BACK LEVEL LEN NODE* -- Back-level low-entry networking node. *HOST XID 3* -- Host node that supports XID3 protocols; includes the network name control vector. *HOST XID 0* -- Host node that supports XID0 protocols. *DSPU XID* -- Down stream physical unit (DSPU) node that supports XID3 protocols, but does not include the network name control vector. *DSPU NO XID* -- Down stream physical unit (DSPU) node that does not support XID protocols. This selection is valid on nonswitched ports and is invalid on negotiable ports.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.23

Parameter:	**Enable DLUR Support for this LS**
Default:	Disable
Options:	Enable | Disable
Function:	Specifies whether the adjacent link station is a PU2.0 node to be serviced by DLUR.
Instructions:	Click on Values and select Enable or Disable.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.28

Parameter:	**Primary DLUS Name**
Default:	None
Options:	Any valid name with up to 17 characters in the format *<NETID>.<NAME>*; *NETID* is the unique network name with up to 8 characters followed by a period, and *NAME* is the control point name with up to 8 characters
Function:	Specifies the fully qualified name of the DLUS node that will serve the PU2.0 link station.
Instructions:	Type up to 8 characters for the network ID name; follow with a period, and then type a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, APPNNODE.DLUR is a valid entry for this parameter.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.30

Parameter:	**DSPU Name**
Default:	None
Options:	Up to 8 alphanumeric uppercase characters.
Function:	Specifies the name of the down stream physical unit (DSPU) supported by DLUR.
Instructions:	Enter up to 8 alphanumeric uppercase characters with no blank spaces (leading, trailing, or embedded). The first character must be a letter.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.29

Parameter:	**Adjacent Node Block Number**
Default:	None
Options:	None
Function:	A unique hexadecimal value that identifies APPN in this adjacent node. The number is the first 3 digits of the node ID.
Instructions:	Accept the derived value that displays in this field.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.10

Parameter:	**Adjacent Node ID Number**
Default:	None
Options:	Optional; if specified, a valid string of 5 hexadecimal digits (0 to 9, A,B,C,D,E,F)
Function:	Identifies the local APPN adjacent node and is present in APPN alerts and exchange identifications (XIDs). These 5 digits are combined with the 3-digit block number to form a unique XID node identification for the adjacent node. The APPN network node and the adjacent node exchange node identifications when establishing a connection.
Instructions:	Enter 5 hexadecimal digits.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.11

Parameter:	**Link Address (hex)**
Default:	None
Options:	None
Function:	Specifies the MAC/SAP, DLCI/SAP (for frame relay), or SDLC address that this adjacent link station will use. This field displays the address you specified when you added the adjacent link station. The MAC address starts with the 0x prefix and ends with the SAP value.
Instructions:	If you choose to specify a new link data address, specify the MAC address in MSB noncanonical format with the 0x prefix, and end the address with the SAP value. For frame relay, specify a valid DLCI and SAP value. For SDLC, specify a valid SDLC address.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.27

Parameter:	**Max Send BTU Size**
Default:	2057
Range:	256 to 4105
Function:	Specifies the maximum Basic Transmission Unit (BTU) size that can be sent over this TG to an adjacent link station. Each link station determines its own maximum send BTU size based on local node definitions and exchange identification (XID) information received from the interface and the adjacent link station.
Instructions:	Enter a number in the range 256 to 4105. The minimum setting for HPR links is 768.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.14

Parameter:	**Target Pacing Count**
Default:	4
Range:	0 to 32767
Function:	Specifies the pacing window size for session requests (BINDs) on this TG to the adjacent link station. APPN uses this value for fixed BIND pacing. Pacing windows control the number of session requests to prevent memory consumption at the adjacent link station.
Instructions:	Enter a value in the range 0 to 32767.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.13

Parameter:	**HPR Support for this LS**
Default:	Disable
Options:	Enable | Disable
Function:	Enables or disables HPR on this link station. This parameter is available when the HPR Support parameter is set to Enable.
Instructions:	Click on Values and select Enable or Disable.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.32

Deleting Adjacent Link Stations

To delete an adjacent link station from the APPN Adjacent Link Station List window (refer to Figure 3-8), select the adjacent link station and click on Delete. The system software deletes the entry from the APPN configuration.

Adding Adjacent Link Stations

To add an adjacent link station to an APPN interface, display the APPN Adjacent Link Station List window (refer to Figure 3-8) and then

1. **Click on Add.**

   The APPN Adjacent Link Station Port Configuration window appears (Figure 3-9).

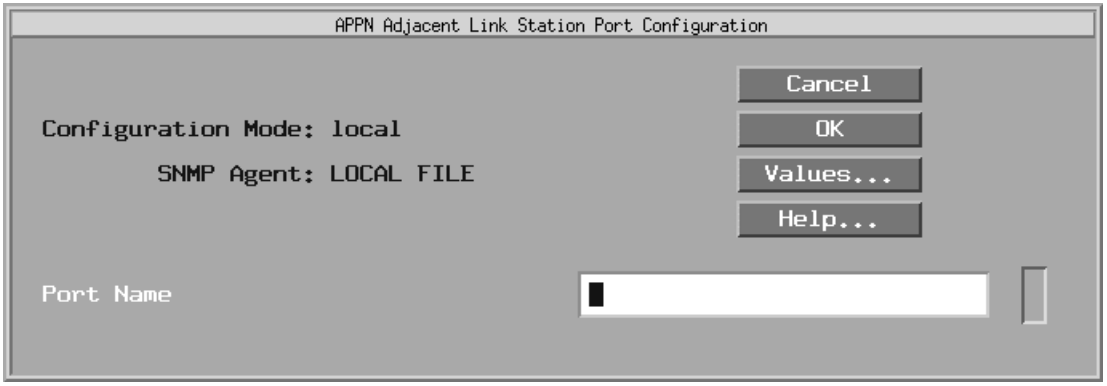

Figure 3-9. APPN Adjacent Link Station Port Configuration Window

2. **Specify the Port Name parameter, as follows:**

Parameter:	**Port Name**
Default:	None
Options:	Up to 8 alphanumeric uppercase characters
Function:	Specifies the name of the port supporting the adjacent link station.
Instructions:	Enter up to 8 alphanumeric uppercase characters with no blank spaces (leading, trailing, or embedded).
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.4

3. **Click on OK.**

   The screen displays the APPN Adjacent Link Station Configuration window specific to your network (Figure 3-10).

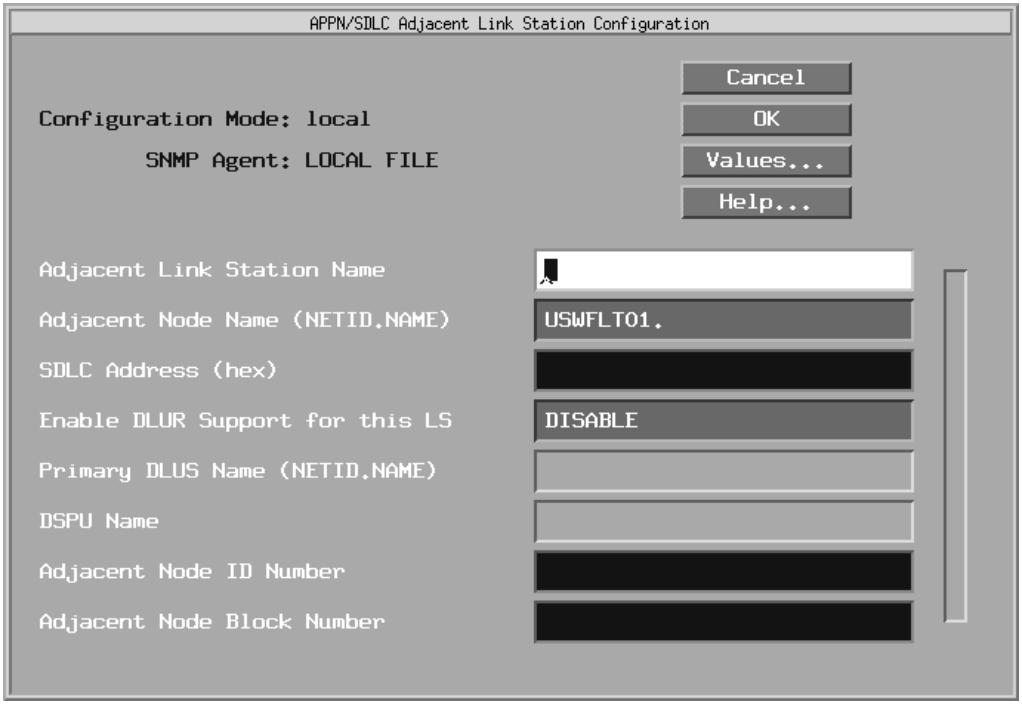

Figure 3-10. APPN Adjacent Link Station Configuration Window

4. **Edit the following parameters, using the parameter descriptions for:**
   - Adjacent Link Station Name
   - Adjacent Node Name
   - Address parameters for the specific network (MAC, SAP, DLCI, SLDC)
   - Enable DLUR Support for this LS
   - Primary DLUS Name
   - DSPU Name
   - Adjacent Node ID Number
   - Adjacent Node Block Number

5. **Click on OK to save your entries to the configuration file.**

   The APPN Adjacent Link Station List window (Figure 3-8) reappears.

Parameter:	**Adjacent Link Station Name**
Default:	None
Options:	Any name with up to 8 uppercase alphabetic characters
Function:	Specifies a unique name for the link station (control point) in the adjacent node. This name differentiates this link station from other defined link stations.
Instructions:	Specify the link station name with up to 8 uppercase characters. Do not specify numbers in the name.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.3

Parameter:	**Adjacent Node Name**
Default:	The Configuration Manager uses the local NETID for the NETID portion of this parameter. You can change the name if the adjacent node had a different NETID.
Options:	Any valid name with up to 17 characters in the format *<NETID>.<NAME>*; *NETID* is the unique network name with up to 8 characters followed by a period, and *NAME* is the control point name with up to 8 characters.
Function:	Identifies the user-specified name of the network and the adjacent node name.
Instructions:	Type up to 8 characters for the network ID name; follow with a period; then type a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, APPNNODE.CPONE is a valid entry for this parameter.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.6

Parameter:	**MAC Address**
Default:	None
Options:	Any unique 48-bit 12-digit hexadecimal MAC-level address
Function:	Specifies a unique MAC-level address for this port connecting the adjacent link station.
Instructions:	Enter a 12-digit hexadecimal MAC-level address in MSB noncanonical format.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.27

Parameter:	**SAP (hex)**
Default:	None
Options:	Any unique service access point (SAP) 2-digit hexadecimal value
Function:	Specifies a service access point (SAP) address that lets multiple applications and protocol entities in a single computer share a MAC address.
Instructions:	Enter a 2-digit hexadecimal value.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.27

Parameter:	**SDLC Address (hex)**
Default:	None
Options:	Any unique 2-digit hexadecimal SDLC-level address
Function:	Specifies a unique SDLC address for this circuit.
Instructions:	Enter a 2-digit hexadecimal address.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.27

Parameter: **DLCI Address**

Default: None

Options: Valid range changes based on the frame relay address length, as follows:

Address Length	Range
2 bytes	16-1007
3 bytes	1024-64511
4 bytes	131072-8257535

Function: This number is the PVC identification number that the frame relay network uses to direct data.

Instructions: Enter a decimal number within the valid range.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.27

Parameter: **Enable DLUR Support for this LS**

Default: Disable

Options: Enable | Disable

Function: Specifies whether the adjacent link station is a PU2.0 node to be serviced by DLUR. DLUR is an APPN component that allows dependent logical units (LU type 0,1,2,3 and dependent LU6.2) within APPN.

Instructions: Click on Values and select Enable or Disable.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.28

Parameter:	**Primary DLUS Name**
Default:	None
Options:	Any valid name with up to 17 characters in the format *<NETID>.<NAME>*; *NETID* is the unique network name with up to 8 characters followed by a period, and *NAME* is the control point name with up to 8 characters
Function:	Specifies the fully qualified name of the DLUS node that will serve the PU2.0 link station.
Instructions:	Type up to 8 characters for the network ID name; follow with a period; and then type a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, APPNNODE.DLUS is a valid entry for this parameter.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.30

Parameter:	**DSPU Name**
Default:	None
Options:	Up to 8 alphanumeric uppercase characters.
Function:	Specifies the name of the downstream physical unit (DSPU) supported by DLUR.
Instructions:	Enter up to 8 alphanumeric uppercase characters with no blank spaces (leading, trailing, or embedded).
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.29

Parameter:	**Adjacent Node ID Number**
Default:	None
Options:	Optional; if specified, a valid string of 5 hexadecimal digits (0 to 9, A,B,C,D,E,F)
Function:	Identifies the local APPN adjacent node and is present in APPN alerts and exchange identifications (XIDs). These 5 digits are combined with the 3-digit block number to form a unique XID node identification for the adjacent node. The APPN network node and the adjacent node exchange node identifications when establishing a connection.
Instructions:	Enter 5 hexadecimal digits.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.11

Parameter:	**Adjacent Node Block Number**
Default:	None
Options:	None
Function:	A unique hexadecimal value that identifies APPN in this adjacent node. The number is the first 3 digits of the node ID.
Instructions:	Accept the derived value that displays in this field.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.10

Editing Advanced Adjacent Link Station Parameters

To edit APPN Advanced Adjacent Link Station parameters, display the APPN Adjacent Link Station List window (refer to Figure 3-8) and then:

1. **Click on Advanced.**

   The APPN Adjacent Link Station Advanced Configuration window appears (Figure 3-11).

Figure 3-11. APPN Adjacent Link Station Advanced Configuration Window

2. **Click on each parameter value that you want to change; then enter a new value.**
3. **Click on OK to save your changes and exit the window.**

Parameter:	**Limited Resource TG**
Default:	No
Options:	Yes | No
Function:	Specifies whether the adjacent link station is classified as a limited resource. If you specify Yes, the TG to the adjacent link station is deactivated when the number of active sessions drops to zero.
Instructions:	Click on Values and specify Yes or No.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.8

Parameter:	**TG Number**
Default:	1
Range:	1 to 20
Function:	Specifies the number of the transmission group to this link station.
Instructions:	Specify a number in the range 1 to 20.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.7

Parameter:	**CP-CP Session Support**
Default:	Yes
Options:	Yes | No
Function:	Specifies whether the adjacent link station supports CP-CP sessions. APPN nodes (network nodes and end nodes) that support control points can communicate, register, and share network resources. Setting this parameter to No can reduce traffic across the TG.
Instructions:	Click on Values and select Yes or No.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.12

Parameter:	**Automatic Activation**
Default:	Disable
Options:	Enable | Disable
Function:	Specifies whether APPN automatically activates the link to the adjacent link station when a session is established.
Instructions:	If the CP-CP Session Support parameter is set to Yes, then this parameter is not modifiable. Otherwise, specify Enable to automatically activate the link when there is a session to the adjacent link station.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.24

Parameter:	**Backup DLUS Name**
Default:	None
Options:	Any valid name with up to 17 characters in the format *<NETID>.<NAME>*; *NETID* is the unique network name with up to 8 characters followed by a period, and *NAME* is the control point name with up to 8 characters
Function:	Specifies the fully qualified name of the DLUS node that serves as a backup to the PU2.0 link station.
Instructions:	Type up to 8 characters for the network ID name; follow with a period; and then type a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, APPNNODE.DLUR is a valid entry for the Backup DLUS Name parameter.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.31

Parameter:	**Use Default TG Characteristics**
Default:	Yes
Options:	Yes | No
Function:	Specifies whether APPN uses default or configured TG characteristics on the port connecting the adjacent link station. The configurable TG characteristics are: Effective Capacity, Connection Cost, Byte Cost, Security, Delay, User 1, User 2, and User 3.
Instructions:	Click on Values and specify Yes or No.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.26

Parameter:	**Effective Capacity**
Default:	16M
Options:	1200 2400 4800 7200 9600 14400 19200 48000 56000 64000 4M 10M 16M Maximum
Function:	The effective capacity is the highest bit-transmission rate allowed on the TG to adjacent link stations on this port. The effective capacity is derived from the link bandwidth.
Instructions:	Click on Values and select a number that reflects the link bandwidth.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.15

Parameter:	**Connection Cost**
Default:	128
Range:	0 to 255
Function:	Specifies the relative cost (per connect time) of using a TG to the adjacent link station on this port. A value of 0 indicates no cost, and a value of 255 indicates maximum cost. The cost per connect time is typically based on the applicable tariffs for the transmission facility that this TG uses.
Instructions:	Enter a number in the range 0 to 255.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.16

Parameter:	**Byte Cost**
Default:	128
Range:	0 to 255 inclusive
Function:	Specifies the relative cost of transmitting a byte over this TG to an adjacent link station on this port. A value of 0 indicates no cost, and a value of 255 indicates maximum cost.
Instructions:	Enter a number in the range 0 to 255.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.17

Parameter:	**Security**
Default:	Nonsecure
Options:	Nonsecure Public-Switched Underground Conduit Encrypted Guarded radiation Maximum
Function:	Specifies the security level of the TG to the adjacent link station on this port.
Instructions:	Click on Values and select one of the common definitions indicated under Options.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.18

Parameter:	**Delay**
Default:	Negligible
Options:	Negligible Terrestrial Packet Long Maximum
Function:	Indicates the propagation delay or the relative amount of time a signal takes to travel the length of a TG to the adjacent link station on this port.
Instructions:	Click on Values and select one of the common definitions indicated under Options.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.19

Parameter:	**User-Defined 1**
Default:	128
Range:	0 to 255
Function:	Specifies the first user-defined TG characteristic using this link station.
Instructions:	Enter a value in the range 0 to 255.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.20

Parameter:	**User-Defined 2**
Default:	128
Range:	0 to 255
Function:	Specifies the second user-defined TG characteristic using this link station.
Instructions:	Enter a value in the range 0 to 255.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.21

Parameter:	**User-Defined 3**
Default:	128
Range:	0 to 255
Function:	Specifies the third user-defined TG characteristic using this link station.
Instructions:	Enter a value in the range 0 to 255.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.22

Parameter:	**LLC Error Recovery Under HPR**
Default:	Disable
Options:	Enable | Disable
Function:	Enables or disables LLC error recovery on this link station. This parameter is available when the global HPR Support parameter is set to Enable, and when the HPR Support for this LS parameter is set to Enable on this link station.
Instructions:	Click on Values and select Enable or Disable.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.33

Parameter:	**Link Deactivation**
Default:	120
Range:	5 to 255
Function:	Specifies the time (in seconds) before APPN deactivates this link station if it is an HPR limited resource. This parameter is available when the following parameters are set to Enable: • HPR Support • HPR Support for this LS • Limited Resource
Instructions:	Specify a value in the range 5 to 255, inclusive.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.4.1.34

Editing APPN Connection Networks

An APPN connection network lets you route session traffic directly between two link stations, without intermediate node intervention. Connection networks require link definitions at a network node for any directly connected nodes.

To edit Connection Networks parameters from the Configuration Manager window (refer to Figure 3-1).

1. **Select Protocols > APPN > Connection Networks.**

   The APPN Connection Network List window appears (Figure 3-12).

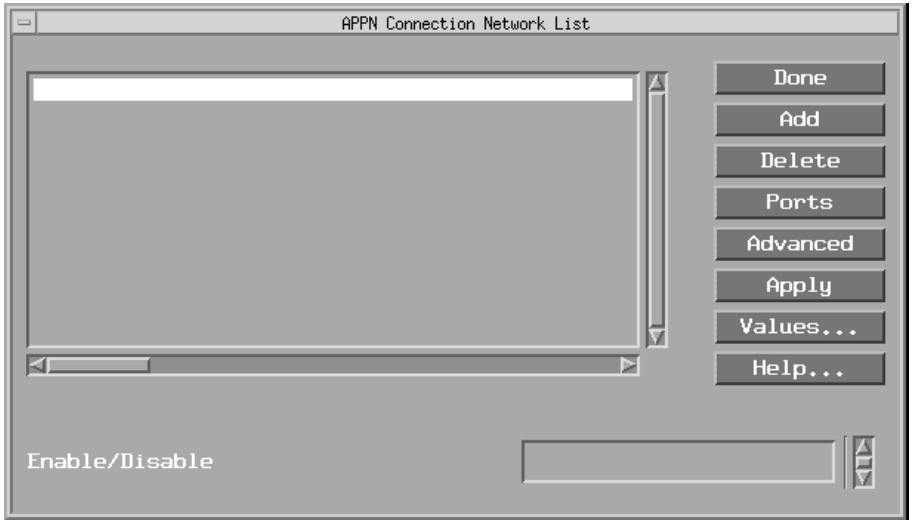

Figure 3-12. APPN Connection Network List Window

Parameter:	**Enable/Disable**
Default:	Enable
Options:	Enable | Disable
Function:	Enables or disables APPN routing on the selected connection network. *Enable* -- Initializes routing on the selected APPN connection network. You can also use the Enable setting to initialize an existing connection network that you disabled earlier. *Disable* -- Brings down routing on the APPN connection network.
Instructions:	Select Disable only to disable APPN routing over this connection network. Select Enable to enable or reenable APPN routing over this connection network.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.6.1.2

Adding APPN Connection Networks

To add a connection network to an APPN configuration, display the APPN Connection Network List window (Figure 3-12) and proceed as follows:

1. **Click on Add.**

   The Connection Network Configuration window appears (Figure 3-13).

2. **Enter the Connection Network Name and the Connection Network Port Name parameters.**

3. **Click on OK to save your entries to the configuration file.**

   The APPN Connection Network List window (Figure 3-12) reappears.

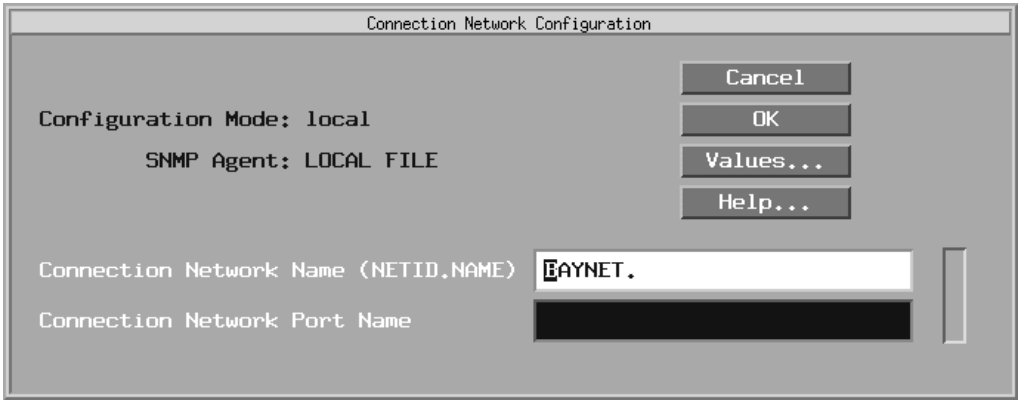

Figure 3-13. Connection Network Configuration Window

Parameter:	**Connection Network Name**
Default:	None
Options:	Any valid name with up to 17 characters in the format *<NETID>.<NAME>*; *NETID* is the unique network name with up to 8 characters followed by a period, and *NAME* is any name with up to 8 characters. (Do not enter the angle brackets; these indicate a variable to be substituted.)
Function:	The Connection Network Name parameter identifies the arbitrary user-specified name of the connection network. By default, the *NETID* portion of the network name is the previously configured Local Node Name parameter, as specified in the Edit APPN Global Parameters window (Figure 3-2).
Instructions:	Following the default *NETID* name and the period(.), enter a name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, APPNNODE.THREE is a valid entry for the Connection Network Name parameter.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.6.1.3

Parameter:	**Connection Network Port Name**
Default:	None
Options:	Up to 8 alphanumeric uppercase characters
Function:	Specifies the name of the port for the connection network.
Instructions:	Enter up to 8 alphanumeric uppercase characters with no blank spaces (leading, trailing, or embedded).
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.7.1.4

4. **Click on OK to save your changes.**

Deleting APPN Connection Networks

To delete a connection network from the APPN Connection Network List window (refer to Figure 3-12), select the network name, then click on Delete. The system software deletes the entry from the APPN configuration.

Editing APPN Connection Network Ports

The APPN Connection Network List window (Figure 3-12) allows you to enable or disable connection network ports, add and delete ports on existing connection networks, and edit advanced connection network parameters. From the APPN Connection Network List window,

1. **Select Ports.**

   The APPN Connection Network Port List window appears (Figure 3-14).

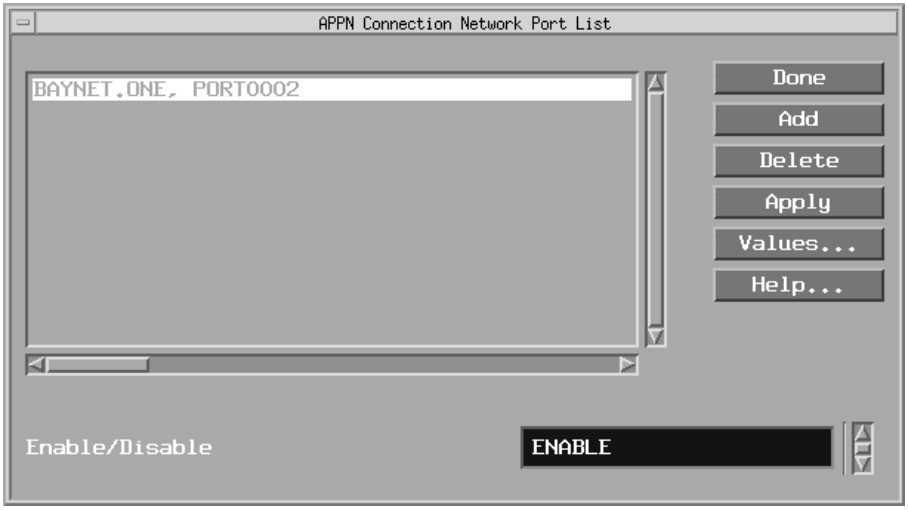

Figure 3-14. APPN Connection Network Port List Window

2. **Select the port you want to modify.**

   Change the setting of the following Enable/Disable parameter, if necessary.

Parameter:	**Enable/Disable**
Default:	Enable
Options:	Enable | Disable
Function:	Enables or disables APPN routing on this connection network port.
	Enable -- Initializes the selected APPN connection network port. You can also use the Enable setting to initialize an existing port that you disabled earlier.
	Disable -- Forces the APPN connection network port into the "down" (inoperative) state.
Instructions:	Select Disable to disable APPN routing over this connection network port.
	Select Enable to reenable APPN routing over this connection network port.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.7.1.2

Adding APPN Connection Network Ports

To add a port to an APPN connection network, display the APPN Connection Network Port List window (refer to Figure 3-14) and then

1. **Click on Add.**

   The Connection Network Port Configuration window appears (Figure 3-15).

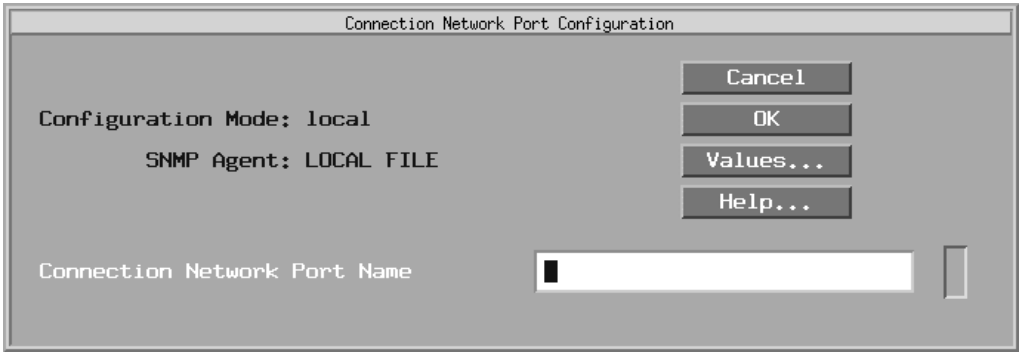

Figure 3-15. Connection Network Port Configuration Window

2. **Edit the Connection Network Port Name parameter.**
3. **Click on OK to save the port name to the configuration file.**

   The APPN Connection Network Port List window (Figure 3-14) reappears.

Parameter:	**Connection Network Port Name**
Default:	None
Options:	Up to 8 alphanumeric uppercase characters
Function:	Specifies the name of the new port for the connection network.
Instructions:	Enter up to 8 alphanumeric uppercase characters with no blank spaces (leading, trailing, or embedded).
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.7.1.4

4. **Click on OK to save your changes.**

Deleting APPN Connection Network Ports

To delete a port from a connection network on the APPN Connection Network Port List window (refer to Figure 3-14), select the port to highlight it, then click on Delete. The system software deletes the entry from the APPN configuration.

Editing APPN Advanced Connection Network Parameters

To edit APPN Advanced Connection Network parameters, display the APPN Connection Network List window (Figure 3-12) and then

1. **Select the connection network that you want to edit. Click on Advanced.**

   The APPN Connection Network Advanced Parameters window appears (Figure 3-16). The connection network name that you selected appears in the title bar.

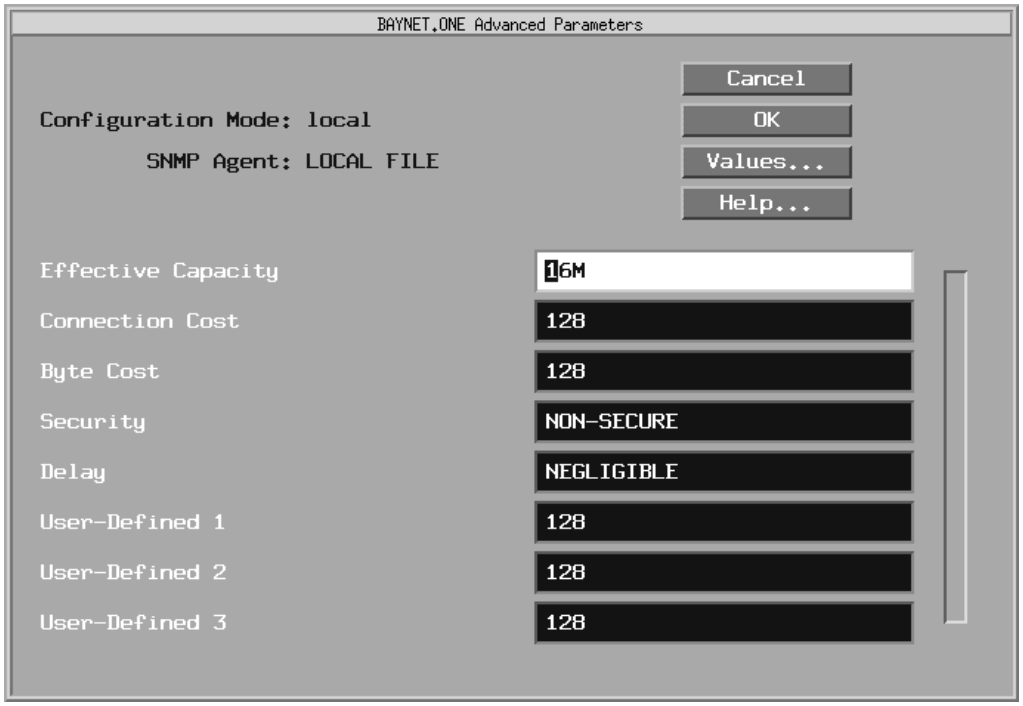

Figure 3-16. APPN Connection Network Advanced Parameters Window

2. **Click on each parameter value that you want to change; then enter a new value.**
3. **Click on OK to save your changes and exit the window.**

Parameter:	**Effective Capacity**
Default:	16M
Options:	1200 2400 4800 7200 9600 14400 19200 48000 56000 64000 4M 10M 16M Maximum
Function:	Represents the highest bit transmission rate value allowed on connection network TGs over configured connection network ports. The effective capacity is derived from the link bandwidth.
Instructions:	Click on Values and select a number that reflects the link bandwidth.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.6.1.5

Parameter:	**Connection Cost**
Default:	128
Range:	0 to 255
Function:	Specifies the relative cost (per connect time) of using a connection network TG over configured connection network ports. A value of 0 indicates no cost, and a value of 255 indicates maximum cost. The cost per connect time is typically based on the applicable tariffs for the transmission facility that this TG uses.
Instructions:	Enter a number in the range 0 to 255.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.6.1.6

Parameter:	**Byte Cost**
Default:	128
Range:	0 to 255
Function:	Specifies the relative cost of transmitting a byte over this connection network TG using configured connection network ports. A value of 0 indicates no cost, and a value of 255 indicates maximum cost.
Instructions:	Enter a number in the range 0 to 255.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.6.1.7

Parameter:	**Security**
Default:	Nonsecure
Options:	Nonsecure Public-Switched Underground Conduit Encrypted Guarded radiation Maximum
Function:	Specifies the security level of the connection network TG over configured connection network ports.
Instructions:	Click on Values and select a definition from the Options list.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.6.1.8

Parameter:	**Delay**
Default:	Negligible
Options:	Negligible Terrestrial Packet Long Maximum
Function:	Represents the propagation delay or the relative amount of time that a signal takes to travel the length of a connection network TG over configured connection network ports.
Instructions:	Click on Values and select a definition from the Options list.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.6.1.9

Parameter:	**User-Defined 1**
Default:	128
Range:	0 to 255
Function:	Specifies the first user-defined TG characteristic for this connection network.
Instructions:	Enter a value in the range 0 to 255.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.6.1.10

Parameter:	**User-Defined 2**
Default:	128
Range:	0 to 255
Function:	Specifies the second user-defined TG characteristic for this connection network.
Instructions:	Enter a value in the range 0 to 255.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.6.1.11

Parameter:	**User-Defined 3**
Default:	128
Range:	0 to 255
Function:	Specifies the third user-defined TG characteristic for this connection network.
Instructions:	Enter a value in the range 0 to 255.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.6.1.12

Editing APPN Directory Entry Parameters

You can define directory entries for network resources that APPN cannot dynamically locate, such as LUs on a LEN node. Directory entries can avoid network searches for commonly used resources. The directory is hierarchical in structure. For example, to configure directory entries for LUs on an adjacent LEN node, first configure the LEN as an end node control point (ENCP) with the local NN as the parent. You then define LUs with the LEN as the parent.

Directory entries can specify the full name of the resource, or can include an asterisk (*) to indicate a wildcard entry. Wildcard entries simplify the definition of many similarly named resources. For example, if a node contains LUs named APPN.LUX1, APPN.LUX2, and so on, you can use the single wildcard entry APPN.LUX*.

To edit APPN directory entry parameters, begin at the Configuration Manager window (Figure 3-1) and then

1. **Select Protocols > APPN > Directory Entries.**

   The APPN Directory Entry List window appears (Figure 3-17). The window displays the qualified LU names of any APPN nodes currently configured for directory services in the local directory database.

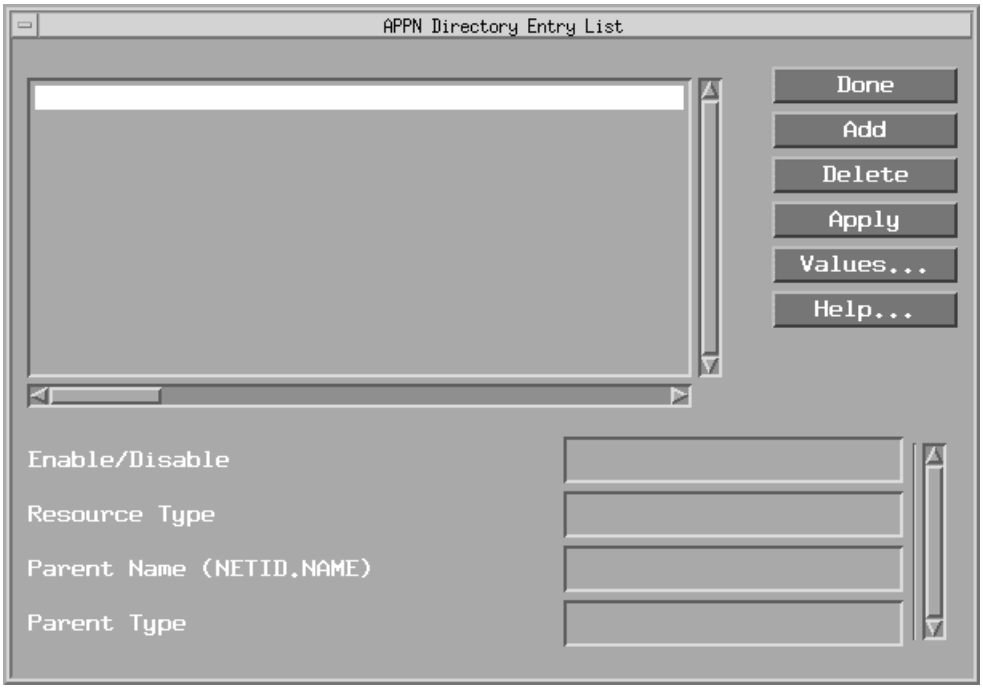

Figure 3-17. APPN Directory Entry List Window

2. **Edit the Enable/Disable, Resource Type, Parent Name, and Parent Type parameters (if the current window contains one or more directory services LU names).**

Parameter:	**Enable/Disable**
Default:	Enable
Options:	Enable | Disable
Function:	Enables or disables APPN directory services on the selected LU name.
Instructions:	Select Disable only to disable APPN directory services on this LU.
	Select Enable to enable or reenable APPN directory services on this LU.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.4.3.1.2

Parameter:	**Resource Type**
Default:	LU (logical unit)
Options:	LU (logical unit) ENCP (end node control point) NNCP (network node control point) Wildcard (*)
Function:	Specifies the type of resource for this directory services entry. When you set this parameter to LU, the local directory services database contains pointers to the CP name of the node owning the LU and the CP name of the network node server.
Instructions:	Click on Values and select LU, ENCP, NNCP or Wildcard (*). Specify Wildcard to instruct APPN that the entry uses the asterisk (*) wildcard. Refer to the beginning of this section for information on using the wildcard with directory entries.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.4.3.1.4

Parameter:	**Parent Name**
Default:	None
Options:	None
Function:	Specifies the fully qualified APPN node name *<NETID>.<NAME>* that owns the selected LU name from the list. By default, the *NETID* portion of the parent name is the previously configured Local Node Name parameter, as specified on the Edit APPN Global Parameters window (Figure 3-2).
Instructions:	Enter the fully qualified APPN node name in the format *<NETID>.<NAME>*. (Do not enter the angle brackets; these indicate a variable to be substituted.) Type up to 8 characters for the network ID name; follow with a period; then a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, NETWORKA.SYSTEMA is a valid entry for the Parent Name parameter.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.4.3.1.5

Parameter:	**Parent Type**
Default:	ENCP (End Node Control Point)
Options:	NNCP (Network Node Control Point) ENCP (End Node Control Point)
Function:	Specifies the node type of the parent, either an APPN EN or NN.
Instructions:	Click on Values and specify NNCP or ENCP.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.4.3.1.6

3. **Click on Apply to save your changes.**

Adding APPN LU Names to Directory Services

To add a qualified LU name to the directory services list, display the APPN Directory Entry List window (Figure 3-17) and proceed as follows:

1. **Click on Add.**

   The Directory Entry Configuration window appears (Figure 3-18).

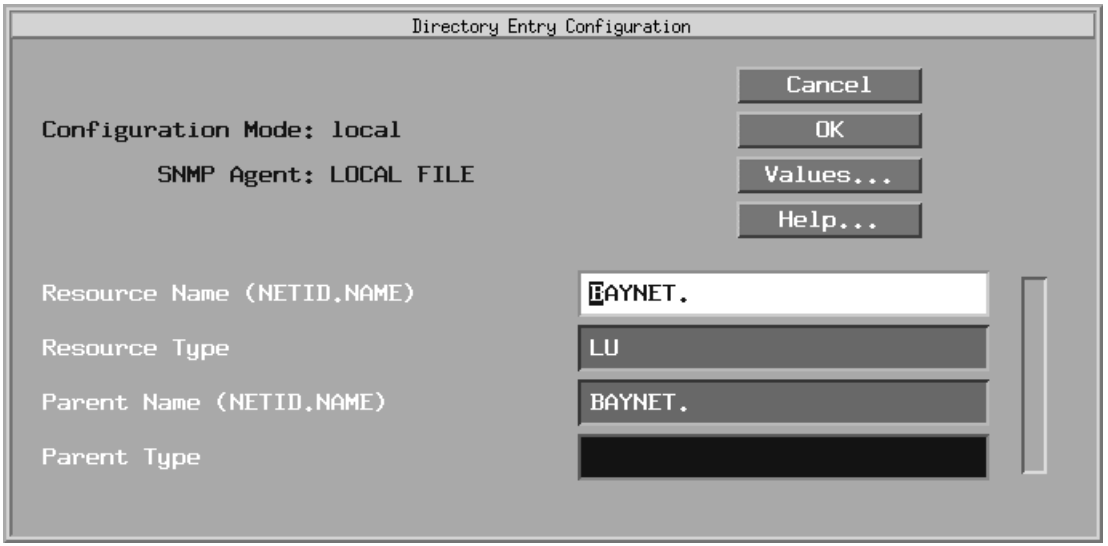

Figure 3-18. Directory Entry Configuration Window

2. Edit the Resource Name and Parent Name parameters.

Parameter:	**Resource Name**
Default:	None
Options:	None
Function:	Specifies the fully qualified name (*<NETID>.<NAME>*) of the resource to be added to the local directory. By default, the *NETID* portion of the name is the previously configured Local Node Name parameter, as specified on the Edit APPN Global Parameters window (Figure 3-2).
Instructions:	Enter the fully qualified APPN resource (node or LU) name in the format *<NETID>.<NAME>* (do not enter the angle brackets; these indicate a variable to be substituted). Type up to 8 characters for the network ID name; follow with a period; then a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, NETWORKA.SYSTEMA is a valid entry for the Parent Name parameter. Use the asterisk (*) wildcard to indicate a wildcard entry. Refer to beginning of this section for information on using the wildcard with directory entries.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.4.3.1.3

Parameter:	**Resource Type**
Default:	LU (logical unit)
Options:	LU (logical unit) ENCP (end node control point) NNCP (network node control point) Wildcard (*)
Function:	Specifies the type of resource for this directory services entry. When you set this parameter to LU, the local directory services database contains pointers to the CP name of the node owning the LU and the CP name of the network node server.
Instructions:	Click on Values and select LU, ENCP, NNCP or Wildcard (*). Specify Wildcard to instruct APPN that the entry uses the asterisk (*) wildcard. Refer to the beginning of this section for information on using the wildcard with directory entries.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.4.3.1.4

Parameter:	**Parent Name**
Default:	None
Options:	None
Function:	Specifies the fully qualified APPN node name (*<NETID>.<NAME>*) that owns the resource being defined. By default, the *NETID* portion of the name is the previously configured Local Node Name parameter, as specified on the Edit APPN Global Parameters window (Figure 3-2).
Instructions:	Enter the fully qualified APPN node name in the format *<NETID>.<NAME>* (do not enter the angle brackets; these are a convention to indicate a variable to be substituted). Type up to 8 characters for the network ID name; follow with a period; then a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, NETWORKA.SYSTEMA is a valid entry for the Parent Name parameter.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.4.3.1.5

Parameter:	**Parent Type**
Default:	ENCP (End Node Control Point)
Options:	NNCP (Network Node Control Point) ENCP (End Node Control Point)
Function:	Specifies the parent node type owning this resource, either an APPN EN or NN.
Instructions:	Click on Values and specify NNCP or ENCP.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.4.3.1.6

3. **Click on OK.**

   You return to the APPN Directory Entry List window (Figure 3-17).

4. **Click on Done to exit the window.**

Deleting APPN Directory Entires

To delete a directory entry from APPN Directory Entry List window (refer to Figure 3-17), select the entry, then click on Delete. The system software deletes the entry from the APPN configuration.

Appendix A
APPN Base and Optional Function Sets

This appendix gives the base and optional APPN function sets that Nortel Networks supports on routers configured as APPN network nodes.

Table A-1. APPN Base Function Sets

Function Set Number	Description
001	LEN-level XID3
002	All XID3 States
003	Link Station Role Negotiation
006	CP Name on XID3
007	TG Number Negotiation
008	Multiple TGs
010	Single-Link TG
011	LFSID Addressing
013	Priority Queuing for Transmission
020	Extended BIND and UNBIND
021	Adaptive Pacing for Independent LU BINDs
023	BIND Segmenting and Reassembly
024	Adaptive Pacing for Dependent LU BINDs
030	CP-CP Sessions
031	CP Capabilities Exchange
033	FQPCID Generation
034	CD-Initiate
035	Reconstruct CD-Initiate Reply
036	COS/TPF

(continued)

Table A-1. APPN Base Function Sets *(continued)*

Function Set Number	Description
037	BIND (ILU = PLU)
038	Limited Resource
039	BIND without RSCV from Any LEN or APPN Node
040	Propagate Unrecognized CVs
041	Session RU Segmenting and Reassembly
042	Interleaved Segments
050	Register EN Resources
051	Locate/Find/Found
052	Reconstruct GDS Variables for Locate Reply and CD-Initiate Reply
053	Participate in Network Searches
054	Send Wildcard Reply
055	Broadcast and Directed Searches
056	ENCP Search Control
057	Partial Directory Entries
059	Accept Unqualified LU Name
060	Locate Chains/Locate (keep)
061	Sending Locate to a Gateway
062	Cache Resource Locations
063	Favor Explicit Replies
064	Network Qualified LU Name
065	Central Directory Client
066	Abbreviated Resource Hierarchy
068	Authentic Net ID Indicators
069	DS Support for Domain LEN Resources
070	Process Local Resource Change
073	Initial Topology Exchange
074	Flow Reduction Sequence Numbers
075	Resource Sequence Numbers
076	Topology Broadcast
077	Garbage Collection
078	Topology Isolation at Net ID Boundaries
079	Build RSCV
080	Calculate Route Using Connection Networks
081	Class-of-Service Manager
082	Route Randomization

(continued)

Table A-1. APPN Base Function Sets *(continued)*

Function Set Number	Description
083	Member of Connection Network
084	Select One-Hop Routes
085	Select Network Routes
090	Common Node Operator Command Set (This is a product-specific function set.)
091	Network Node Operator Command Set (This is a product-specific function set)
100	Extend/Unextend BIND and UNBIND
101	Fixed Session Level Pacing
102	Adaptive Session Level Pacing
103	Intermediate Session Segmenting/Reassembly
104	Routing BIND and UNBIND
105	Intermediate Session Routing for Dependent LU Sessions
106	Intermediate Session Routing for Independent LU Sessions
Management Services - Multiple Domain Support (MDS) Function Set	
150	SNA/MS MDS Common Base
152	SNA/MS MDS Network Node Support
153	SNA/MS MDS High Performance Option
154	SNA/MS MDS Transport Confirmation Option
Management Services - Entry Point Alert Function Set	
170	SNA/MS EP Alert Base Subset
171	SNA/MS Problem Diagnosis Data in Alert (Optional)
177	SNA/MS LAN Alert (Optional)
178	SNA/MS SDLC/LAN LLC Alert (Optional)
1001	Secondary-Initiated Non-Activation XID
1004	Adjacent Node Name-Change
1013	Interoperability with Peripheral Border Node
1103	Retry Referred Search
1104	Topology-Based Directory Non-Verify
1105	PCID Modifier
1109	Surrogate Owner

Table A-2. APPN Optional Function Sets

Function Set Number	Description
1002	Adjacent Link Station Name
1007	Parallel TGs
1011	Multiple Local LUs, Session Manager for Local Independent LU 6.2, and Intranode Routing
1012	LU Name = CP Name
1018	Delete EN Resources Before Registering
1067	Dependent LU Requester
1107	Central Resource Registration (of LUs)
1200	Tree Caching and TG Caching
1301	Nonpaced Intermediate Session Traffic
1400	High Performance Routing
1401	RTP Tower
1402	Control Flows over RTP Tower

Appendix B
APPN Default Settings

This appendix gives the default settings for APPN parameters. Use the Configuration Manager to edit any of the default settings given here.

Table B-1. APPN Global and Advanced Global Parameters

Parameter	Default
APPN Enable/Disable	Enable
Local Node Name	None
Local ID Block	None
Local ID Number	None
Route Addition Resistance	128
Endpoint Session RSCV Storage	Enable
Max Directory Entries	0
Max Cached Directory Entries	100
Network Local Timeout (in s)	60
TRS Route Tree Cache Size	8
TRS Route Tree Cache Size Usage Limit	8
Max NNs in Topology DB (0=Unlimited)	0
Max TGs in Topology DB (0=Unlimited)	0
Max Number of ISR Sessions	1000

(continued)

Table B-1. APPN Global and Advanced Global Parameters *(continued)*

Parameter	Default
ISR Congestion Threshold	900
ISR Decongestion Threshold	800
Max RU Size for ISR Sessions	4096
ISR Receive Pacing Window	7
ISR Session RSCV Storage	Enable
DLUR Support Enable/Disable	Disable
Default DLUS Name	None
Default Backup DLUS Name	None
DLUR-DLUS RSCV Storage	Enable
HPR Support	Enable
HPR Path Switch Controller Support	Disable

Table B-2. APPN Interface and Port Parameters

Parameter	Default
Interface Enable/Disable	Enable
Port Enable/Disable	Enable
Port Address	None
Local Link Station Role	Negotiable
Port Name	None
Port Number	None
Port DLCI Address	None
Port MAC Address	None
Port SAP (hex)	None

(continued)

Table B-2. APPN Interface and Port Parameters *(continued)*

Parameter	Default
Max Receive BTU Size	2057
Max Send BTU Size	2057
Max I-Frame Window	7
Total Link Activation Limits	1
Inbound Link Activation Limits	0
Outbound Link Activation Limits	0
Implicit CP Sessions	Yes
Implicit Limited Resource	No
Implicit Effective Capacity	16M
Implicit Connection Cost	128
Implicit Byte Cost	128
Implicit Security	Nonsecure
Implicit Delay	Negligible
Implicit User-Defined 1	128
Implicit User-Defined 2	128
Implicit User-Defined 3	128
DLUR Implicit LS Support	Disable
HPR Implicit LS Support	Enable
LLC Error Recovery Under HPR	Disable
Implicit Link Deactivation Time	120
HPR UI SAP	C8

(continued)

Table B-3. APPN Adjacent Link Station Parameters

Parameter	Default
Enable/Disable	Enable
Port Name	None
Adjacent Node Name	None
Adjacent Node Type	Learn
Enable DLUR Support for this LS	Disable
Primary DLUS Name	None
DSPU Name	None
Adjacent Node Block Number	None
Adjacent Node ID Number	None
Link Address (hex)	None
Max Send BTU Size	2057
Target Pacing Count	4
HPR Support for this LS	Disable
Adjacent Link Station Name	None
Adjacent Node Name	Local NETID for NETID portion of name
MAC Address (hex)	None
SAP (hex)	None
SDLC Address (hex)	None
DLCI Address	None
Limited Resource TG	No
TG Number	1 (or current unused minimum)
CP-CP Session Support	Yes
Automatic Activation	Disable

(continued)

Table B-3. APPN Adjacent Link Station Parameters *(continued)*

Parameter	Default
Backup DLUS Name	None
Use Default TG Characteristics	No
Effective Capacity	16M
Connection Cost	128
Byte Cost	128
Security	Nonsecure
Delay	Negligible
User-Defined 1	128
User-Defined 2	128
User-Defined 3	128
LLC Error Recovery Under HPR	Disable
Link Deactivation	120

Table B-4. APPN Connection Networks and Port Parameters

Parameter	Default
Enable/Disable	Enable
Connection Network Name	None
Connection Network Port Name	None
Effective Capacity	16M
Connection Cost	128
Byte Cost	128
Security	Non-secure
Delay	Negligible

(continued)

Table B-4. APPN Connection Networks and Port Parameters *(continued)*

Parameter	Default
User-Defined 1	128
User-Defined 2	128
User-Defined 3	128

Table B-5. APPN Directory Services Parameters

Parameter	Default
Enable/Disable	Enable
Resource Type	LU
Parent Name	None
Parent Type	ENCP
Resource Name	NETID portion of local node name

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